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(54) Title: COMPOSITIONS AND METHODS FOR THE THERAPY AND DIAGNOSIS OF LUNG CANCER

(57) Abstract: Compositions and methods for the therapy and diagnosis of cancer, such as lung cancer, are disclosed. Compositions may comprise one or more lung tumor proteins, immunogenic portions thereof, or polynucleotides that encode such portions. Alternatively, a therapeutic composition may comprise an antigen presenting cell that expresses a lung tumor protein, or a T cell that is specific for cells expressing such a protein. Such compositions may be used, for example, for the prevention and treatment of diseases such as lung cancer. Diagnostic methods based on detecting a lung tumor protein, or mRNA encoding such a protein, in a sample are also provided.

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COMPOSITIONS AND METHODS FOR THE THERAPY AND DIAGNOSIS OF LUNG CANCER

TECHNICAL FIELD OF THE INVENTION

The present invention relates generally to therapy and diagnosis of
5 cancer, such as lung cancer. The invention is more specifically related to polypeptides
comprising at least a portion of a lung tumor protein, and to polynucleotides encoding
such polypeptides. Such polypeptides and polynucleotides may be used in
compositions for prevention and treatment of lung cancer, and for the diagnosis and
monitoring of such cancers.

10 BACKGROUND OF THE INVENTION

Cancer is a significant health problem throughout the world. Although
advances have been made in detection and therapy of cancer, no vaccine or other
universally successful method for prevention or treatment is currently available.
Current therapies, which are generally based on a combination of chemotherapy or
15 surgery and radiation, continue to prove inadequate in many patients.

Lung cancer is the primary cause of cancer death among both men and
women in the U.S., with an estimated 172,000 new cases being reported in 1994. The
five-year survival rate among all lung cancer patients, regardless of the stage of disease
at diagnosis, is only 13%. This contrasts with a five-year survival rate of 46% among
20 cases detected while the disease is still localized. However, only 16% of lung cancers
are discovered before the disease has spread.

Early detection is difficult since clinical symptoms are often not seen
until the disease has reached an advanced stage. Currently, diagnosis is aided by the
use of chest x-rays, analysis of the type of cells contained in sputum and fiberoptic
25 examination of the bronchial passages. Treatment regimens are determined by the type
and stage of the cancer, and include surgery, radiation therapy and/or chemotherapy.

In spite of considerable research into therapies for this and other cancers,
lung cancer remains difficult to diagnose and treat effectively. Accordingly, there is a

need in the art for improved methods for detecting and treating such cancers. The present invention fulfills these needs and further provides other related advantages.

SUMMARY OF THE INVENTION

Briefly stated, the present invention provides compositions and methods
5 for the diagnosis and therapy of cancer, such as lung cancer. In one aspect, the present invention provides polypeptides comprising at least a portion of a lung tumor protein, or a variant thereof. Certain portions and other variants are immunogenic, such that the ability of the variant to react with antigen-specific antisera is not substantially diminished. Within certain embodiments, the polypeptide comprises a sequence that is
10 encoded by a polynucleotide sequence selected from the group consisting of: (a) sequences recited in SEQ ID NO: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236,
15 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826; (b) variants of a sequence recited in SEQ ID NO: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134,
20 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826; and (c) complements of a sequence of (a) or (b). In specific embodiments, the polypeptides
25 of the present invention comprise at least a portion of a tumor protein that includes an amino acid sequence selected from the group consisting of sequences recited in SEQ ID NO: 786, 787, 791, 793, 795, 797-799, 806, 809 and 827, and variants thereof.

The present invention further provides polynucleotides that encode a polypeptide as described above, or a portion thereof (such as a portion encoding at least

15 amino acid residues of a lung tumor protein), expression vectors comprising such polynucleotides and host cells transformed or transfected with such expression vectors.

Within other aspects, the present invention provides pharmaceutical compositions comprising a polypeptide or polynucleotide as described above and a
5 physiologically acceptable carrier.

Within a related aspect of the present invention, vaccines, or immunogenic compositions, for prophylactic or therapeutic use are provided. Such vaccines comprise a polypeptide or polynucleotide as described above and an immunostimulant.

10 The present invention further provides pharmaceutical compositions that comprise: (a) an antibody or antigen-binding fragment thereof that specifically binds to a lung tumor protein; and (b) a physiologically acceptable carrier.

Within further aspects, the present invention provides pharmaceutical compositions comprising: (a) an antigen presenting cell that expresses a polypeptide as
15 described above and (b) a pharmaceutically acceptable carrier or excipient. Antigen presenting cells include dendritic cells, macrophages, monocytes, fibroblasts and B cells.

Within related aspects, vaccines, or immunogenic compositions, are provided that comprise: (a) an antigen presenting cell that expresses a polypeptide as
20 described above and (b) an immunostimulant.

The present invention further provides, in other aspects, fusion proteins that comprise at least one polypeptide as described above, as well as polynucleotides encoding such fusion proteins.

Within related aspects, pharmaceutical compositions comprising a fusion
25 protein, or a polynucleotide encoding a fusion protein, in combination with a physiologically acceptable carrier are provided.

Vaccines, or immunogenic compositions, are further provided, within other aspects, that comprise a fusion protein, or a polynucleotide encoding a fusion protein, in combination with an immunostimulant.

30 Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a

patient a pharmaceutical composition or immunogenic composition as recited above. The patient may be afflicted with lung cancer, in which case the methods provide treatment for the disease, or patient considered at risk for such a disease may be treated prophylactically.

5 The present invention further provides, within other aspects, methods for removing tumor cells from a biological sample, comprising contacting a biological sample with T cells that specifically react with a lung tumor protein, wherein the step of contacting is performed under conditions and for a time sufficient to permit the removal of cells expressing the protein from the sample.

10 Within related aspects, methods are provided for inhibiting the development of a cancer in a patient, comprising administering to a patient a biological sample treated as described above.

 Methods are further provided, within other aspects, for stimulating and/or expanding T cells specific for a lung tumor protein, comprising contacting T
15 cells with one or more of: (i) a polypeptide as described above; (ii) a polynucleotide encoding such a polypeptide; and/or (iii) an antigen presenting cell that expresses such a polypeptide; under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells. Isolated T cell populations comprising T cells prepared as described above are also provided.

20 Within further aspects, the present invention provides methods for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a T cell population as described above.

 The present invention further provides methods for inhibiting the development of a cancer in a patient, comprising the steps of: (a) incubating CD4⁺
25 and/or CD8⁺ T cells isolated from a patient with one or more of: (i) a polypeptide comprising at least an immunogenic portion of a lung tumor protein; (ii) a polynucleotide encoding such a polypeptide; and (iii) an antigen-presenting cell that expressed such a polypeptide; and (b) administering to the patient an effective amount of the proliferated T cells, and thereby inhibiting the development of a cancer in the
30 patient. Proliferated cells may, but need not, be cloned prior to administration to the patient.

Within further aspects, the present invention provides methods for determining the presence or absence of a cancer in a patient, comprising: (a) contacting a biological sample obtained from a patient with a binding agent that binds to a polypeptide as recited above; (b) detecting in the sample an amount of polypeptide that
5 binds to the binding agent; and (c) comparing the amount of polypeptide with a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient. Within preferred embodiments, the binding agent is an antibody, more preferably a monoclonal antibody. The cancer may be lung cancer.

The present invention also provides, within other aspects, methods for
10 monitoring the progression of a cancer in a patient. Such methods comprise the steps of: (a) contacting a biological sample obtained from a patient at a first point in time with a binding agent that binds to a polypeptide as recited above; (b) detecting in the sample an amount of polypeptide that binds to the binding agent; (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in
15 time; and (d) comparing the amount of polypeptide detected in step (c) with the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

The present invention further provides, within other aspects, methods for determining the presence or absence of a cancer in a patient, comprising the steps of: (a)
20 contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a lung tumor protein; (b) detecting in the sample a level of a polynucleotide, preferably mRNA, that hybridizes to the oligonucleotide; and (c) comparing the level of polynucleotide that hybridizes to the oligonucleotide with a predetermined cut-off value, and therefrom determining the
25 presence or absence of a cancer in the patient. Within certain embodiments, the amount of mRNA is detected via polymerase chain reaction using, for example, at least one oligonucleotide primer that hybridizes to a polynucleotide encoding a polypeptide as recited above, or a complement of such a polynucleotide. Within other embodiments, the amount of mRNA is detected using a hybridization technique, employing an
30 oligonucleotide probe that hybridizes to a polynucleotide that encodes a polypeptide as recited above, or a complement of such a polynucleotide.

In related aspects, methods are provided for monitoring the progression of a cancer in a patient, comprising the steps of: (a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a lung tumor protein; (b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and (d) comparing the amount of polynucleotide detected in step (c) with the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

Within further aspects, the present invention provides antibodies, such as monoclonal antibodies, that bind to a polypeptide as described above, as well as diagnostic kits comprising such antibodies. Diagnostic kits comprising one or more oligonucleotide probes or primers as described above are also provided.

These and other aspects of the present invention will become apparent upon reference to the following detailed description and attached drawings. All references disclosed herein are hereby incorporated by reference in their entirety as if each was incorporated individually.

SEQUENCE IDENTIFIERS

SEQ ID NO: 1 is the determined cDNA sequence for clone #19038, also referred to as L845P.

SEQ ID NO: 2 is the determined cDNA sequence for clone #19036.

SEQ ID NO: 3 is the determined cDNA sequence for clone #19034.

SEQ ID NO: 4 is the determined cDNA sequence for clone #19033.

SEQ ID NO: 5 is the determined cDNA sequence for clone #19032.

SEQ ID NO: 6 is the determined cDNA sequence for clone #19030, also referred to as L559S.

SEQ ID NO: 7 is the determined cDNA sequence for clone #19029.

SEQ ID NO: 8 is the determined cDNA sequence for clone #19025.

SEQ ID NO: 9 is the determined cDNA sequence for clone #19023.

SEQ ID NO: 10 is the determined cDNA sequence for clone #18929.

SEQ ID NO: 11 is the determined cDNA sequence for clone #19010.

SEQ ID NO: 12 is the determined cDNA sequence for clone #19009.

SEQ ID NO: 13 is the determined cDNA sequence for clones #19005, 19007, 19016 and 19017.

SEQ ID NO: 14 is the determined cDNA sequence for clone #19004.

5 SEQ ID NO: 15 is the determined cDNA sequence for clones #19002 and 18965.

SEQ ID NO: 16 is the determined cDNA sequence for clone #18998.

SEQ ID NO: 17 is the determined cDNA sequence for clone #18997.

SEQ ID NO: 18 is the determined cDNA sequence for clone #18996.

10 SEQ ID NO: 19 is the determined cDNA sequence for clone #18995.

SEQ ID NO: 20 is the determined cDNA sequence for clone #18994, also known as L846P.

SEQ ID NO: 21 is the determined cDNA sequence for clone #18992.

SEQ ID NO: 22 is the determined cDNA sequence for clone #18991.

15 SEQ ID NO: 23 is the determined cDNA sequence for clone #18990, also referred to as clone #20111.

SEQ ID NO: 24 is the determined cDNA sequence for clone #18987.

SEQ ID NO: 25 is the determined cDNA sequence for clone #18985, also referred as L839P.

20 SEQ ID NO: 26 is the determined cDNA sequence for clone #18984, also referred to as L847P.

SEQ ID NO: 27 is the determined cDNA sequence for clone #18983.

SEQ ID NO: 28 is the determined cDNA sequence for clones #18976 and 18980.

25 SEQ ID NO: 29 is the determined cDNA sequence for clone #18975.

SEQ ID NO: 30 is the determined cDNA sequence for clone #18974.

SEQ ID NO: 31 is the determined cDNA sequence for clone #18973.

SEQ ID NO: 32 is the determined cDNA sequence for clone #18972.

30 SEQ ID NO: 33 is the determined cDNA sequence for clone #18971, also referred to as L801P.

SEQ ID NO: 34 is the determined cDNA sequence for clone #18970.

SEQ ID NO: 35 is the determined cDNA sequence for clone #18966.

SEQ ID NO: 36 is the determined cDNA sequence for clones #18964,
18968 and 19039.

SEQ ID NO: 37 is the determined cDNA sequence for clone #18960.

5 SEQ ID NO: 38 is the determined cDNA sequence for clone #18959.

SEQ ID NO: 39 is the determined cDNA sequence for clones #18958
and 18982.

SEQ ID NO: 40 is the determined cDNA sequence for clones #18956
and 19015.

10 SEQ ID NO: 41 is the determined cDNA sequence for clone #18954,
also referred to L848P.

SEQ ID NO: 42 is the determined cDNA sequence for clone #18951.

SEQ ID NO: 43 is the determined cDNA sequence for clone #18950.

15 SEQ ID NO: 44 is the determined cDNA sequence for clones #18949
and 19024, also referred to as L844P.

SEQ ID NO: 45 is the determined cDNA sequence for clone #18948.

SEQ ID NO: 46 is the determined cDNA sequence for clone #18947,
also referred to as L840P.

20 SEQ ID NO: 47 is the determined cDNA sequence for clones #18946,
18953, 18969 and 19027.

SEQ ID NO: 48 is the determined cDNA sequence for clone #18942.

SEQ ID NO: 49 is the determined cDNA sequence for clone #18940,
18962, 18963, 19006, 19008, 19000, and 19031.

SEQ ID NO: 50 is the determined cDNA sequence for clone #18939.

25 SEQ ID NO: 51 is the determined cDNA sequence for clones #18938
and 18952.

SEQ ID NO: 52 is the determined cDNA sequence for clone #18938.

SEQ ID NO: 53 is the determined cDNA sequence for clone #18937.

30 SEQ ID NO: 54 is the determined cDNA sequence for clones #18934,
18935, 18993 and 19022, also referred to as L548S.

SEQ ID NO: 55 is the determined cDNA sequence for clone #18932.

SEQ ID NO: 56 is the determined cDNA sequence for clones #18931 and 18936.

SEQ ID NO: 57 is the determined cDNA sequence for clone #18930.

5 SEQ ID NO: 58 is the determined cDNA sequence for clone #19014, also referred to as L773P.

SEQ ID NO: 59 is the determined cDNA sequence for clone #19127.

SEQ ID NO: 60 is the determined cDNA sequence for clones #19057 and 19064.

SEQ ID NO: 61 is the determined cDNA sequence for clone #19122.

10 SEQ ID NO: 62 is the determined cDNA sequence for clones #19120 and 18121.

SEQ ID NO: 63 is the determined cDNA sequence for clone #19118.

SEQ ID NO: 64 is the determined cDNA sequence for clone #19117.

SEQ ID NO: 65 is the determined cDNA sequence for clone #19116.

15 SEQ ID NO: 66 is the determined cDNA sequence for clone #19114.

SEQ ID NO: 67 is the determined cDNA sequence for clone #19112, also known as L561S.

SEQ ID NO: 68 is the determined cDNA sequence for clone #19110.

20 SEQ ID NO: 69 is the determined cDNA sequence for clone #19107, also referred to as L552S.

SEQ ID NO: 70 is the determined cDNA sequence for clone #19106, also referred to as L547S.

SEQ ID NO: 71 is the determined cDNA sequence for clones #19105 and 19111.

25 SEQ ID NO: 72 is the determined cDNA sequence for clone #19099.

SEQ ID NO: 73 is the determined cDNA sequence for clones #19095, 19104 and 19125, also referred to as L549S.

SEQ ID NO: 74 is the determined cDNA sequence for clone #19094.

30 SEQ ID NO: 75 is the determined cDNA sequence for clones #19089 and 19101.

SEQ ID NO: 76 is the determined cDNA sequence for clone #19088.

SEQ ID NO: 77 is the determined cDNA sequence for clones #19087, 19092, 19096, 19100 and 19119.

SEQ ID NO: 78 is the determined cDNA sequence for clone #19086.

SEQ ID NO: 79 is the determined cDNA sequence for clone #19085,
5 also referred to as L550S.

SEQ ID NO: 80 is the determined cDNA sequence for clone #19084,
also referred to as clone #19079.

SEQ ID NO: 81 is the determined cDNA sequence for clone #19082.

SEQ ID NO: 82 is the determined cDNA sequence for clone #19080.

10 SEQ ID NO: 83 is the determined cDNA sequence for clone #19077.

SEQ ID NO: 84 is the determined cDNA sequence for clone #19076,
also referred to as L551S.

SEQ ID NO: 85 is the determined cDNA sequence for clone #19074,
also referred to as clone #20102.

15 SEQ ID NO: 86 is the determined cDNA sequence for clone #19073,
also referred to as L560S.

SEQ ID NO: 87 is the determined cDNA sequence for clones #19072
and 19115.

SEQ ID NO: 88 is the determined cDNA sequence for clone #19071.

20 SEQ ID NO: 89 is the determined cDNA sequence for clone #19070.

SEQ ID NO: 90 is the determined cDNA sequence for clone #19069.

SEQ ID NO: 91 is the determined cDNA sequence for clone #19068,
also referred to L563S.

SEQ ID NO: 92 is the determined cDNA sequence for clone #19066.

25 SEQ ID NO: 93 is the determined cDNA sequence for clone #19065.

SEQ ID NO: 94 is the determined cDNA sequence for clone #19063.

SEQ ID NO: 95 is the determined cDNA sequence for clones #19061,
19081, 19108 and 19109.

30 SEQ ID NO: 96 is the determined cDNA sequence for clones #19060,
19067 and 19083, also referred to as L548S.

SEQ ID NO: 97 is the determined cDNA sequence for clones #19059
and 19062.

SEQ ID NO: 98 is the determined cDNA sequence for clone #19058.
SEQ ID NO: 99 is the determined cDNA sequence for clone #19124.
5 SEQ ID NO: 100 is the determined cDNA sequence for clone #18929.
SEQ ID NO: 101 is the determined cDNA sequence for clone #18422.
SEQ ID NO: 102 is the determined cDNA sequence for clone #18425.
SEQ ID NO: 103 is the determined cDNA sequence for clone #18431.
SEQ ID NO: 104 is the determined cDNA sequence for clone #18433.
10 SEQ ID NO: 105 is the determined cDNA sequence for clone #18444.
SEQ ID NO: 106 is the determined cDNA sequence for clone #18449.
SEQ ID NO: 107 is the determined cDNA sequence for clone #18451.
SEQ ID NO: 108 is the determined cDNA sequence for clone #18452.
SEQ ID NO: 109 is the determined cDNA sequence for clone #18455.
15 SEQ ID NO: 110 is the determined cDNA sequence for clone #18457.
SEQ ID NO: 111 is the determined cDNA sequence for clone #18466.
SEQ ID NO: 112 is the determined cDNA sequence for clone #18468.
SEQ ID NO: 113 is the determined cDNA sequence for clone #18471.
SEQ ID NO: 114 is the determined cDNA sequence for clone #18475.
20 SEQ ID NO: 115 is the determined cDNA sequence for clone #18476.
SEQ ID NO: 116 is the determined cDNA sequence for clone #18477.
SEQ ID NO: 117 is the determined cDNA sequence for clone #20631.
SEQ ID NO: 118 is the determined cDNA sequence for clone #20634.
SEQ ID NO: 119 is the determined cDNA sequence for clone #20635.
25 SEQ ID NO: 120 is the determined cDNA sequence for clone #20637.
SEQ ID NO: 121 is the determined cDNA sequence for clone #20638.
SEQ ID NO: 122 is the determined cDNA sequence for clone #20643.
SEQ ID NO: 123 is the determined cDNA sequence for clone #20652.
SEQ ID NO: 124 is the determined cDNA sequence for clone #20653.
30 SEQ ID NO: 125 is the determined cDNA sequence for clone #20657.
SEQ ID NO: 126 is the determined cDNA sequence for clone #20658.

SEQ ID NO: 127 is the determined cDNA sequence for clone #20660.
SEQ ID NO: 128 is the determined cDNA sequence for clone #20661.
SEQ ID NO: 129 is the determined cDNA sequence for clone #20663.
SEQ ID NO: 130 is the determined cDNA sequence for clone #20665.
5 SEQ ID NO: 131 is the determined cDNA sequence for clone #20670.
SEQ ID NO: 132 is the determined cDNA sequence for clone #20671.
SEQ ID NO: 133 is the determined cDNA sequence for clone #20672.
SEQ ID NO: 134 is the determined cDNA sequence for clone #20675.
SEQ ID NO: 135 is the determined cDNA sequence for clone #20679.
10 SEQ ID NO: 136 is the determined cDNA sequence for clone #20681.
SEQ ID NO: 137 is the determined cDNA sequence for clone #20682.
SEQ ID NO: 138 is the determined cDNA sequence for clone #20684.
SEQ ID NO: 139 is the determined cDNA sequence for clone #20685.
SEQ ID NO: 140 is the determined cDNA sequence for clone #20689.
15 SEQ ID NO: 141 is the determined cDNA sequence for clone #20699.
SEQ ID NO: 142 is the determined cDNA sequence for clone #20701.
SEQ ID NO: 143 is the determined cDNA sequence for clone #20702.
SEQ ID NO: 144 is the determined cDNA sequence for clone #20708.
SEQ ID NO: 145 is the determined cDNA sequence for clone #20715.
20 SEQ ID NO: 146 is the determined cDNA sequence for clone #20716.
SEQ ID NO: 147 is the determined cDNA sequence for clone #20719.
SEQ ID NO: 148 is the determined cDNA sequence for clone #19129.
SEQ ID NO: 149 is the determined cDNA sequence for clone #19131.1.
SEQ ID NO: 150 is the determined cDNA sequence for clone #19132.2.
25 SEQ ID NO: 151 is the determined cDNA sequence for clone #19133.
SEQ ID NO: 152 is the determined cDNA sequence for clone #19134.2.
SEQ ID NO: 153 is the determined cDNA sequence for clone #19135.2.
SEQ ID NO: 154 is the determined cDNA sequence for clone #19137.
SEQ ID NO: 155 is a first determined cDNA sequence for clone
30 #19138.1.

- SEQ ID NO: 156 is a second determined cDNA sequence for clone #19138.2.
- SEQ ID NO: 157 is the determined cDNA sequence for clone #19139.
- 5 SEQ ID NO: 158 is a first determined cDNA sequence for clone #19140.1.
- SEQ ID NO: 159 is a second determined cDNA sequence for clone #19140.2.
- SEQ ID NO: 160 is the determined cDNA sequence for clone #19141.
- SEQ ID NO: 161 is the determined cDNA sequence for clone #19143.
- 10 SEQ ID NO: 162 is the determined cDNA sequence for clone #19144.
- SEQ ID NO: 163 is a first determined cDNA sequence for clone #19145.1.
- SEQ ID NO: 164 is a second determined cDNA sequence for clone #19145.2.
- 15 SEQ ID NO: 165 is the determined cDNA sequence for clone #19146.
- SEQ ID NO: 166 is the determined cDNA sequence for clone #19149.1.
- SEQ ID NO: 167 is the determined cDNA sequence for clone #19152.
- SEQ ID NO: 168 is a first determined cDNA sequence for clone #19153.1.
- 20 SEQ ID NO: 169 is a second determined cDNA sequence for clone #19153.2.
- SEQ ID NO: 170 is the determined cDNA sequence for clone #19155.
- SEQ ID NO: 171 is the determined cDNA sequence for clone #19157.
- SEQ ID NO: 172 is the determined cDNA sequence for clone #19159.
- 25 SEQ ID NO: 173 is the determined cDNA sequence for clone #19160.
- SEQ ID NO: 174 is a first determined cDNA sequence for clone #19161.1.
- SEQ ID NO: 175 is a second determined cDNA sequence for clone #19161.2.
- 30 SEQ ID NO: 176 is the determined cDNA sequence for clone #19162.1.
- SEQ ID NO: 177 is the determined cDNA sequence for clone #19166.

SEQ ID NO: 178 is the determined cDNA sequence for clone #19169.
SEQ ID NO: 179 is the determined cDNA sequence for clone #19171.
SEQ ID NO: 180 is a first determined cDNA sequence for clone
#19173.1.
5 SEQ ID NO: 181 is a second determined cDNA sequence for clone
#19173.2.
SEQ ID NO: 182 is the determined cDNA sequence for clone #19174.1.
SEQ ID NO: 183 is the determined cDNA sequence for clone #19175.
SEQ ID NO: 184 is the determined cDNA sequence for clone #19177.
10 SEQ ID NO: 185 is the determined cDNA sequence for clone #19178.
SEQ ID NO: 186 is the determined cDNA sequence for clone #19179.1.
SEQ ID NO: 187 is the determined cDNA sequence for clone #19179.2.
SEQ ID NO: 188 is the determined cDNA sequence for clone #19180.
SEQ ID NO: 189 is a first determined cDNA sequence for clone
15 #19182.1.
SEQ ID NO: 190 is a second determined cDNA sequence for clone
#19182.2.
SEQ ID NO: 191 is the determined cDNA sequence for clone #19183.1.
SEQ ID NO: 192 is the determined cDNA sequence for clone #19185.1.
20 SEQ ID NO: 193 is the determined cDNA sequence for clone #19187.
SEQ ID NO: 194 is the determined cDNA sequence for clone #19188.
SEQ ID NO: 195 is the determined cDNA sequence for clone #19190.
SEQ ID NO: 196 is the determined cDNA sequence for clone #19191.
SEQ ID NO: 197 is the determined cDNA sequence for clone #19192.
25 SEQ ID NO: 198 is the determined cDNA sequence for clone #19193.
SEQ ID NO: 199 is a first determined cDNA sequence for clone
#19194.1.
SEQ ID NO: 200 is a second determined cDNA sequence for clone
#19194.2.
30 SEQ ID NO: 201 is the determined cDNA sequence for clone #19197.

SEQ ID NO: 202 is a first determined cDNA sequence for clone
#19200.1.

SEQ ID NO: 203 is a second determined cDNA sequence for clone
#19200.2.

5 SEQ ID NO: 204 is the determined cDNA sequence for clone #19202.
SEQ ID NO: 205 is a first determined cDNA sequence for clone
#19204.1.

SEQ ID NO: 206 is a second determined cDNA sequence for clone
#19204.2.

10 SEQ ID NO: 207 is the determined cDNA sequence for clone #19205.
SEQ ID NO: 208 is a first determined cDNA sequence for clone
#19206.1.

SEQ ID NO: 209 is a second determined cDNA sequence for clone
#19206.2.

15 SEQ ID NO: 210 is the determined cDNA sequence for clone #19207.
SEQ ID NO: 211 is the determined cDNA sequence for clone #19208.
SEQ ID NO: 212 is a first determined cDNA sequence for clone
#19211.1.

SEQ ID NO: 213 is a second determined cDNA sequence for clone
20 #19211.2.

SEQ ID NO: 214 is a first determined cDNA sequence for clone
#19214.1.

SEQ ID NO: 215 is a second determined cDNA sequence for clone
#19214.2.

25 SEQ ID NO: 216 is the determined cDNA sequence for clone #19215.
SEQ ID NO: 217 is a first determined cDNA sequence for clone #19217.
2.

SEQ ID NO: 218 is a second determined cDNA sequence for clone
#19217.2.

30 SEQ ID NO: 219 is a first determined cDNA sequence for clone
#19218.1.

SEQ ID NO: 220 is a second determined cDNA sequence for clone #19218.2.

SEQ ID NO: 221 is a first determined cDNA sequence for clone #19220.1.

5 SEQ ID NO: 222 is a second determined cDNA sequence for clone #19220.2.

SEQ ID NO: 223 is the determined cDNA sequence for clone #22015.

SEQ ID NO: 224 is the determined cDNA sequence for clone #22017.

SEQ ID NO: 225 is the determined cDNA sequence for clone #22019.

10 SEQ ID NO: 226 is the determined cDNA sequence for clone #22020.

SEQ ID NO: 227 is the determined cDNA sequence for clone #22023.

SEQ ID NO: 228 is the determined cDNA sequence for clone #22026.

SEQ ID NO: 229 is the determined cDNA sequence for clone #22027.

SEQ ID NO: 230 is the determined cDNA sequence for clone #22028.

15 SEQ ID NO: 231 is the determined cDNA sequence for clone #22032.

SEQ ID NO: 232 is the determined cDNA sequence for clone #22037.

SEQ ID NO: 233 is the determined cDNA sequence for clone #22045.

SEQ ID NO: 234 is the determined cDNA sequence for clone #22048.

SEQ ID NO: 235 is the determined cDNA sequence for clone #22050.

20 SEQ ID NO: 236 is the determined cDNA sequence for clone #22052.

SEQ ID NO: 237 is the determined cDNA sequence for clone #22053.

SEQ ID NO: 238 is the determined cDNA sequence for clone #22057.

SEQ ID NO: 239 is the determined cDNA sequence for clone #22066.

SEQ ID NO: 240 is the determined cDNA sequence for clone #22077.

25 SEQ ID NO: 241 is the determined cDNA sequence for clone #22085.

SEQ ID NO: 242 is the determined cDNA sequence for clone #22105.

SEQ ID NO: 243 is the determined cDNA sequence for clone #22108.

SEQ ID NO: 244 is the determined cDNA sequence for clone #22109.

SEQ ID NO: 245 is the determined cDNA sequence for clone #24842.

30 SEQ ID NO: 246 is the determined cDNA sequence for clone #24843.

SEQ ID NO: 247 is the determined cDNA sequence for clone #24845.

SEQ ID NO: 248 is the determined cDNA sequence for clone #24851.
SEQ ID NO: 249 is the determined cDNA sequence for clone #24852.
SEQ ID NO: 250 is the determined cDNA sequence for clone #24853.
SEQ ID NO: 251 is the determined cDNA sequence for clone #24854.
5 SEQ ID NO: 252 is the determined cDNA sequence for clone #24855.
SEQ ID NO: 253 is the determined cDNA sequence for clone #24860.
SEQ ID NO: 254 is the determined cDNA sequence for clone #24864.
SEQ ID NO: 255 is the determined cDNA sequence for clone #24866.
SEQ ID NO: 256 is the determined cDNA sequence for clone #24867.
10 SEQ ID NO: 257 is the determined cDNA sequence for clone #24868.
SEQ ID NO: 258 is the determined cDNA sequence for clone #24869.
SEQ ID NO: 259 is the determined cDNA sequence for clone #24870.
SEQ ID NO: 260 is the determined cDNA sequence for clone #24872.
SEQ ID NO: 261 is the determined cDNA sequence for clone #24873.
15 SEQ ID NO: 262 is the determined cDNA sequence for clone #24875.
SEQ ID NO: 263 is the determined cDNA sequence for clone #24882.
SEQ ID NO: 264 is the determined cDNA sequence for clone #24885.
SEQ ID NO: 265 is the determined cDNA sequence for clone #24886.
SEQ ID NO: 266 is the determined cDNA sequence for clone #24887.
20 SEQ ID NO: 267 is the determined cDNA sequence for clone #24888.
SEQ ID NO: 268 is the determined cDNA sequence for clone #24890.
SEQ ID NO: 269 is the determined cDNA sequence for clone #24896.
SEQ ID NO: 270 is the determined cDNA sequence for clone #24897.
SEQ ID NO: 271 is the determined cDNA sequence for clone #24899.
25 SEQ ID NO: 272 is the determined cDNA sequence for clone #24901.
SEQ ID NO: 273 is the determined cDNA sequence for clone #24902.
SEQ ID NO: 274 is the determined cDNA sequence for clone #24906.
SEQ ID NO: 275 is the determined cDNA sequence for clone #24912.
SEQ ID NO: 276 is the determined cDNA sequence for clone #24913.
30 SEQ ID NO: 277 is the determined cDNA sequence for clone #24920.
SEQ ID NO: 278 is the determined cDNA sequence for clone #24927.

SEQ ID NO: 279 is the determined cDNA sequence for clone #24930.
SEQ ID NO: 280 is the determined cDNA sequence for clone #26938.
SEQ ID NO: 281 is the determined cDNA sequence for clone #26939.
SEQ ID NO: 282 is the determined cDNA sequence for clone #26943.
5 SEQ ID NO: 283 is the determined cDNA sequence for clone #26948.
SEQ ID NO: 284 is the determined cDNA sequence for clone #26951.
SEQ ID NO: 285 is the determined cDNA sequence for clone #26955.
SEQ ID NO: 286 is the determined cDNA sequence for clone #26956.
SEQ ID NO: 287 is the determined cDNA sequence for clone #26959.
10 SEQ ID NO: 288 is the determined cDNA sequence for clone #26961.
SEQ ID NO: 289 is the determined cDNA sequence for clone #26962.
SEQ ID NO: 290 is the determined cDNA sequence for clone #26964.
SEQ ID NO: 291 is the determined cDNA sequence for clone #26966.
SEQ ID NO: 292 is the determined cDNA sequence for clone #26968.
15 SEQ ID NO: 293 is the determined cDNA sequence for clone #26972.
SEQ ID NO: 294 is the determined cDNA sequence for clone #26973.
SEQ ID NO: 295 is the determined cDNA sequence for clone #26974.
SEQ ID NO: 296 is the determined cDNA sequence for clone #26976.
SEQ ID NO: 297 is the determined cDNA sequence for clone #26977.
20 SEQ ID NO: 298 is the determined cDNA sequence for clone #26979.
SEQ ID NO: 299 is the determined cDNA sequence for clone #26980.
SEQ ID NO: 300 is the determined cDNA sequence for clone #26981.
SEQ ID NO: 301 is the determined cDNA sequence for clone #26984.
SEQ ID NO: 302 is the determined cDNA sequence for clone #26985.
25 SEQ ID NO: 303 is the determined cDNA sequence for clone #26986.
SEQ ID NO: 304 is the determined cDNA sequence for clone #26993.
SEQ ID NO: 305 is the determined cDNA sequence for clone #26994.
SEQ ID NO: 306 is the determined cDNA sequence for clone #26995.
SEQ ID NO: 307 is the determined cDNA sequence for clone #27003.
30 SEQ ID NO: 308 is the determined cDNA sequence for clone #27005.
SEQ ID NO: 309 is the determined cDNA sequence for clone #27010.

SEQ ID NO: 310 is the determined cDNA sequence for clone #27011.
SEQ ID NO: 311 is the determined cDNA sequence for clone #27013.
SEQ ID NO: 312 is the determined cDNA sequence for clone #27016
SEQ ID NO: 313 is the determined cDNA sequence for clone #27017.
5 SEQ ID NO: 314 is the determined cDNA sequence for clone #27019.
SEQ ID NO: 315 is the determined cDNA sequence for clone #27028.
SEQ ID NO: 316 is the full-length cDNA sequence for clone #19060.
SEQ ID NO: 317 is the full-length cDNA sequence for clone #18964.
SEQ ID NO: 318 is the full-length cDNA sequence for clone #18929.
10 SEQ ID NO: 319 is the full-length cDNA sequence for clone #18991.
SEQ ID NO: 320 is the full-length cDNA sequence for clone #18996.
SEQ ID NO: 321 is the full-length cDNA sequence for clone #18966.
SEQ ID NO: 322 is the full-length cDNA sequence for clone #18951.
SEQ ID NO: 323 is the full-length cDNA sequence for clone #18973
15 (also known as L516S).
SEQ ID NO: 324 is the amino acid sequence for clone #19060.
SEQ ID NO: 325 is the amino acid sequence for clone #19063.
SEQ ID NO: 326 is the amino acid sequence for clone #19077.
SEQ ID NO: 327 is the amino acid sequence for clone #19110.
20 SEQ ID NO: 328 is the amino acid sequence for clone #19122.
SEQ ID NO: 329 is the amino acid sequence for clone #19118.
SEQ ID NO: 330 is the amino acid sequence for clone #19080.
SEQ ID NO: 331 is the amino acid sequence for clone #19127.
SEQ ID NO: 332 is the amino acid sequence for clone #19117.
25 SEQ ID NO: 333 is the amino acid sequence for clone #19095, also
referred to L549S.
SEQ ID NO: 334 is the amino acid sequence for clone #18964.
SEQ ID NO: 335 is the amino acid sequence for clone #18929.
SEQ ID NO: 336 is the amino acid sequence for clone #18991.
30 SEQ ID NO: 337 is the amino acid sequence for clone #18996.
SEQ ID NO: 338 is the amino acid sequence for clone #18966.

SEQ ID NO: 339 is the amino acid sequence for clone #18951.
SEQ ID NO: 340 is the amino acid sequence for clone #18973.
SEQ ID NO: 341 is the determined cDNA sequence for clone 26461.
SEQ ID NO: 342 is the determined cDNA sequence for clone 26462.
5 SEQ ID NO: 343 is the determined cDNA sequence for clone 26463.
SEQ ID NO: 344 is the determined cDNA sequence for clone 26464.
SEQ ID NO: 345 is the determined cDNA sequence for clone 26465.
SEQ ID NO: 346 is the determined cDNA sequence for clone 26466.
SEQ ID NO: 347 is the determined cDNA sequence for clone 26467.
10 SEQ ID NO: 348 is the determined cDNA sequence for clone 26468.
SEQ ID NO: 349 is the determined cDNA sequence for clone 26469.
SEQ ID NO: 350 is the determined cDNA sequence for clone 26470.
SEQ ID NO: 351 is the determined cDNA sequence for clone 26471.
SEQ ID NO: 352 is the determined cDNA sequence for clone 26472.
15 SEQ ID NO: 353 is the determined cDNA sequence for clone 26474.
SEQ ID NO: 354 is the determined cDNA sequence for clone 26475.
SEQ ID NO: 355 is the determined cDNA sequence for clone 26476.
SEQ ID NO: 356 is the determined cDNA sequence for clone 26477.
SEQ ID NO: 357 is the determined cDNA sequence for clone 26478.
20 SEQ ID NO: 358 is the determined cDNA sequence for clone 26479.
SEQ ID NO: 359 is the determined cDNA sequence for clone 26480.
SEQ ID NO: 360 is the determined cDNA sequence for clone 26481.
SEQ ID NO: 361 is the determined cDNA sequence for clone 26482.
SEQ ID NO: 362 is the determined cDNA sequence for clone 26483.
25 SEQ ID NO: 363 is the determined cDNA sequence for clone 26484.
SEQ ID NO: 364 is the determined cDNA sequence for clone 26485.
SEQ ID NO: 365 is the determined cDNA sequence for clone 26486.
SEQ ID NO: 366 is the determined cDNA sequence for clone 26487.
SEQ ID NO: 367 is the determined cDNA sequence for clone 26488.
30 SEQ ID NO: 368 is the determined cDNA sequence for clone 26489.
SEQ ID NO: 369 is the determined cDNA sequence for clone 26490.

SEQ ID NO: 370 is the determined cDNA sequence for clone 26491.
SEQ ID NO: 371 is the determined cDNA sequence for clone 26492.
SEQ ID NO: 372 is the determined cDNA sequence for clone 26493.
SEQ ID NO: 373 is the determined cDNA sequence for clone 26494.
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SEQ ID NO: 375 is the determined cDNA sequence for clone 26496.
SEQ ID NO: 376 is the determined cDNA sequence for clone 26497.
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SEQ ID NO: 380 is the determined cDNA sequence for clone 26501.
SEQ ID NO: 381 is the determined cDNA sequence for clone 26502.
SEQ ID NO: 382 is the determined cDNA sequence for clone 26503.
SEQ ID NO: 383 is the determined cDNA sequence for clone 26504.
15 SEQ ID NO: 384 is the determined cDNA sequence for clone 26505.
SEQ ID NO: 385 is the determined cDNA sequence for clone 26506.
SEQ ID NO: 386 is the determined cDNA sequence for clone 26507.
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SEQ ID NO: 388 is the determined cDNA sequence for clone 26509.
20 SEQ ID NO: 389 is the determined cDNA sequence for clone 26511.
SEQ ID NO: 390 is the determined cDNA sequence for clone 26513.
SEQ ID NO: 391 is the determined cDNA sequence for clone 26514.
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SEQ ID NO: 393 is the determined cDNA sequence for clone 26516.
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SEQ ID NO: 395 is the determined cDNA sequence for clone 26518.
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SEQ ID NO: 397 is the determined cDNA sequence for clone 26520.
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SEQ ID NO: 400 is the determined cDNA sequence for clone 26523.

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SEQ ID NO: 402 is the determined cDNA sequence for clone 26526.
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SEQ ID NO: 406 is the determined cDNA sequence for clone 26530.
SEQ ID NO: 407 is the determined cDNA sequence for clone 26532.
SEQ ID NO: 408 is the determined cDNA sequence for clone 26533.
SEQ ID NO: 409 is the determined cDNA sequence for clone 26534.
10 SEQ ID NO: 410 is the determined cDNA sequence for clone 26535.
SEQ ID NO: 411 is the determined cDNA sequence for clone 26536.
SEQ ID NO: 412 is the determined cDNA sequence for clone 26537.
SEQ ID NO: 413 is the determined cDNA sequence for clone 26538.
SEQ ID NO: 414 is the determined cDNA sequence for clone 26540.
15 SEQ ID NO: 415 is the determined cDNA sequence for clone 26541.
SEQ ID NO: 416 is the determined cDNA sequence for clone 26542.
SEQ ID NO: 417 is the determined cDNA sequence for clone 26543.
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SEQ ID NO: 423 is the determined cDNA sequence for clone 26550.
SEQ ID NO: 424 is the determined cDNA sequence for clone 26551.
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SEQ ID NO: 431 is the determined cDNA sequence for clone 27632.

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SEQ ID NO: 443 is the determined cDNA sequence for clone 27647.
SEQ ID NO: 444 is the determined cDNA sequence for clone 27649.
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SEQ ID NO: 447 is the determined cDNA sequence for clone 27652.
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SEQ ID NO: 453 is the determined cDNA sequence for clone 27666.
SEQ ID NO: 454 is the determined cDNA sequence for clone 27668.
SEQ ID NO: 455 is the determined cDNA sequence for clone 27670.
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SEQ ID NO: 457 is the determined cDNA sequence for clone 27672.
SEQ ID NO: 458 is the determined cDNA sequence for clone 27674.
SEQ ID NO: 459 is the determined cDNA sequence for clone 27677.
SEQ ID NO: 460 is the determined cDNA sequence for clone 27681.
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SEQ ID NO: 462 is the determined cDNA sequence for clone 27683.

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SEQ ID NO: 471 is the determined cDNA sequence for clone 27705.
10 SEQ ID NO: 472 is the determined cDNA sequence for clone 27706.
SEQ ID NO: 473 is the determined cDNA sequence for clone 27707.
SEQ ID NO: 474 is the determined cDNA sequence for clone 27708.
SEQ ID NO: 475 is the determined cDNA sequence for clone 27709.
SEQ ID NO: 476 is the determined cDNA sequence for clone 27710.
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SEQ ID NO: 478 is the determined cDNA sequence for clone 27712.
SEQ ID NO: 479 is the determined cDNA sequence for clone 27713.
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SEQ ID NO: 481 is the determined cDNA sequence for clone 27715.
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SEQ ID NO: 483 is the determined cDNA sequence for clone 27717.
SEQ ID NO: 484 is the determined cDNA sequence for clone 27718.
SEQ ID NO: 485 is the determined cDNA sequence for clone 27719.
SEQ ID NO: 486 is the determined cDNA sequence for clone 27720.
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SEQ ID NO: 488 is the determined cDNA sequence for clone 27723.
SEQ ID NO: 489 is the determined cDNA sequence for clone 27724.
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30 SEQ ID NO: 492 is the determined cDNA sequence for clone 25016.
SEQ ID NO: 493 is the determined cDNA sequence for clone 25017.

SEQ ID NO: 494 is the determined cDNA sequence for clone 25018
SEQ ID NO: 495 is the determined cDNA sequence for clone 25030.
SEQ ID NO: 496 is the determined cDNA sequence for clone 25033.
SEQ ID NO: 497 is the determined cDNA sequence for clone 25034.
5 SEQ ID NO: 498 is the determined cDNA sequence for clone 25035.
SEQ ID NO: 499 is the determined cDNA sequence for clone 25036.
SEQ ID NO: 500 is the determined cDNA sequence for clone 25037.
SEQ ID NO: 501 is the determined cDNA sequence for clone 25038.
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10 SEQ ID NO: 503 is the determined cDNA sequence for clone 25040.
SEQ ID NO: 504 is the determined cDNA sequence for clone 25042.
SEQ ID NO: 505 is the determined cDNA sequence for clone 25043.
SEQ ID NO: 506 is the determined cDNA sequence for clone 25044.
SEQ ID NO: 507 is the determined cDNA sequence for clone 25045.
15 SEQ ID NO: 508 is the determined cDNA sequence for clone 25047.
SEQ ID NO: 509 is the determined cDNA sequence for clone 25048.
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SEQ ID NO: 514 is the determined cDNA sequence for clone 25188.
SEQ ID NO: 515 is the determined cDNA sequence for clone 25189.
SEQ ID NO: 516 is the determined cDNA sequence for clone 25190.
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SEQ ID NO: 519 is the determined cDNA sequence for clone 25196.
SEQ ID NO: 520 is the determined cDNA sequence for clone 25198.
SEQ ID NO: 521 is the determined cDNA sequence for clone 25199.
SEQ ID NO: 522 is the determined cDNA sequence for clone 25200.
30 SEQ ID NO: 523 is the determined cDNA sequence for clone 25202.
SEQ ID NO: 524 is the determined cDNA sequence for clone 25364.

SEQ ID NO: 525 is the determined cDNA sequence for clone 25366.
SEQ ID NO: 526 is the determined cDNA sequence for clone 25367.
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10 SEQ ID NO: 534 is the determined cDNA sequence for clone 25376.
SEQ ID NO: 535 is the determined cDNA sequence for clone 25377.
SEQ ID NO: 536 is the determined cDNA sequence for clone 25378.
SEQ ID NO: 537 is the determined cDNA sequence for clone 25379.
SEQ ID NO: 538 is the determined cDNA sequence for clone 25380.
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SEQ ID NO: 540 is the determined cDNA sequence for clone 25382.
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SEQ ID NO: 542 is the determined cDNA sequence for clone 25385.
SEQ ID NO: 543 is the determined cDNA sequence for clone 25386.
20 SEQ ID NO: 544 is the determined cDNA sequence for clone 25387.
SEQ ID NO: 545 is the determined cDNA sequence for clone 26013.
SEQ ID NO: 546 is the determined cDNA sequence for clone 26014.
SEQ ID NO: 547 is the determined cDNA sequence for clone 26016.
SEQ ID NO: 548 is the determined cDNA sequence for clone 26017.
25 SEQ ID NO: 549 is the determined cDNA sequence for clone 26018.
SEQ ID NO: 550 is the determined cDNA sequence for clone 26019.
SEQ ID NO: 551 is the determined cDNA sequence for clone 26020.
SEQ ID NO: 552 is the determined cDNA sequence for clone 26021.
SEQ ID NO: 553 is the determined cDNA sequence for clone 26022.
30 SEQ ID NO: 554 is the determined cDNA sequence for clone 26027.
SEQ ID NO: 555 is the determined cDNA sequence for clone 26197.

SEQ ID NO: 556 is the determined cDNA sequence for clone 26199.
SEQ ID NO: 557 is the determined cDNA sequence for clone 26201.
SEQ ID NO: 558 is the determined cDNA sequence for clone 26202.
SEQ ID NO: 559 is the determined cDNA sequence for clone 26203.
5 SEQ ID NO: 560 is the determined cDNA sequence for clone 26204.
SEQ ID NO: 561 is the determined cDNA sequence for clone 26205.
SEQ ID NO: 562 is the determined cDNA sequence for clone 26206.
SEQ ID NO: 563 is the determined cDNA sequence for clone 26208.
SEQ ID NO: 564 is the determined cDNA sequence for clone 26211.
10 SEQ ID NO: 565 is the determined cDNA sequence for clone 26212.
SEQ ID NO: 566 is the determined cDNA sequence for clone 26213.
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SEQ ID NO: 571 is the determined cDNA sequence for clone 26218.
SEQ ID NO: 572 is the determined cDNA sequence for clone 26219.
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SEQ ID NO: 574 is the determined cDNA sequence for clone 26221.
20 SEQ ID NO: 575 is the determined cDNA sequence for clone 26224.
SEQ ID NO: 576 is the determined cDNA sequence for clone 26225.
SEQ ID NO: 577 is the determined cDNA sequence for clone 26226.
SEQ ID NO: 578 is the determined cDNA sequence for clone 26227.
SEQ ID NO: 579 is the determined cDNA sequence for clone 26228.
25 SEQ ID NO: 580 is the determined cDNA sequence for clone 26230.
SEQ ID NO: 581 is the determined cDNA sequence for clone 26231.
SEQ ID NO: 582 is the determined cDNA sequence for clone 26234.
SEQ ID NO: 583 is the determined cDNA sequence for clone 26236.
SEQ ID NO: 584 is the determined cDNA sequence for clone 26237.
30 SEQ ID NO: 585 is the determined cDNA sequence for clone 26239.
SEQ ID NO: 586 is the determined cDNA sequence for clone 26240.

SEQ ID NO: 587 is the determined cDNA sequence for clone 26241.
SEQ ID NO: 588 is the determined cDNA sequence for clone 26242.
SEQ ID NO: 589 is the determined cDNA sequence for clone 26246.
SEQ ID NO: 590 is the determined cDNA sequence for clone 26247.
5 SEQ ID NO: 591 is the determined cDNA sequence for clone 26248.
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SEQ ID NO: 598 is the determined cDNA sequence for clone 26255.
SEQ ID NO: 599 is the determined cDNA sequence for clone 26256.
SEQ ID NO: 600 is the determined cDNA sequence for clone 26257.
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SEQ ID NO: 602 is the determined cDNA sequence for clone 26260.
SEQ ID NO: 603 is the determined cDNA sequence for clone 26261.
SEQ ID NO: 604 is the determined cDNA sequence for clone 26262.
SEQ ID NO: 605 is the determined cDNA sequence for clone 26263.
20 SEQ ID NO: 606 is the determined cDNA sequence for clone 26264.
SEQ ID NO: 607 is the determined cDNA sequence for clone 26265.
SEQ ID NO: 608 is the determined cDNA sequence for clone 26266.
SEQ ID NO: 609 is the determined cDNA sequence for clone 26268.
SEQ ID NO: 610 is the determined cDNA sequence for clone 26269.
25 SEQ ID NO: 611 is the determined cDNA sequence for clone 26271.
SEQ ID NO: 612 is the determined cDNA sequence for clone 26273.
SEQ ID NO: 613 is the determined cDNA sequence for clone 26810.
SEQ ID NO: 614 is the determined cDNA sequence for clone 26811.
SEQ ID NO: 615 is the determined cDNA sequence for clone 26812.1.
30 SEQ ID NO: 616 is the determined cDNA sequence for clone 26812.2.
SEQ ID NO: 617 is the determined cDNA sequence for clone 26813.

SEQ ID NO: 618 is the determined cDNA sequence for clone 26814.
SEQ ID NO: 619 is the determined cDNA sequence for clone 26815.
SEQ ID NO: 620 is the determined cDNA sequence for clone 26816.
SEQ ID NO: 621 is the determined cDNA sequence for clone 26818.
5 SEQ ID NO: 622 is the determined cDNA sequence for clone 26819.
SEQ ID NO: 623 is the determined cDNA sequence for clone 26820.
SEQ ID NO: 624 is the determined cDNA sequence for clone 26821.
SEQ ID NO: 625 is the determined cDNA sequence for clone 26822.
SEQ ID NO: 626 is the determined cDNA sequence for clone 26824.
10 SEQ ID NO: 627 is the determined cDNA sequence for clone 26825.
SEQ ID NO: 628 is the determined cDNA sequence for clone 26826.
SEQ ID NO: 629 is the determined cDNA sequence for clone 26827.
SEQ ID NO: 630 is the determined cDNA sequence for clone 26829.
SEQ ID NO: 631 is the determined cDNA sequence for clone 26830.
15 SEQ ID NO: 632 is the determined cDNA sequence for clone 26831.
SEQ ID NO: 633 is the determined cDNA sequence for clone 26832.
SEQ ID NO: 634 is the determined cDNA sequence for clone 26835.
SEQ ID NO: 635 is the determined cDNA sequence for clone 26836.
SEQ ID NO: 636 is the determined cDNA sequence for clone 26837.
20 SEQ ID NO: 637 is the determined cDNA sequence for clone 26839.
SEQ ID NO: 638 is the determined cDNA sequence for clone 26841.
SEQ ID NO: 639 is the determined cDNA sequence for clone 26843.
SEQ ID NO: 640 is the determined cDNA sequence for clone 26844.
SEQ ID NO: 641 is the determined cDNA sequence for clone 26845.
25 SEQ ID NO: 642 is the determined cDNA sequence for clone 26846.
SEQ ID NO: 643 is the determined cDNA sequence for clone 26847.
SEQ ID NO: 644 is the determined cDNA sequence for clone 26848.
SEQ ID NO: 645 is the determined cDNA sequence for clone 26849.
SEQ ID NO: 646 is the determined cDNA sequence for clone 26850.
30 SEQ ID NO: 647 is the determined cDNA sequence for clone 26851.
SEQ ID NO: 648 is the determined cDNA sequence for clone 26852.

SEQ ID NO: 649 is the determined cDNA sequence for clone 26853.
SEQ ID NO: 650 is the determined cDNA sequence for clone 26854.
SEQ ID NO: 651 is the determined cDNA sequence for clone 26856.
SEQ ID NO: 652 is the determined cDNA sequence for clone 26857.
5 SEQ ID NO: 653 is the determined cDNA sequence for clone 26858.
SEQ ID NO: 654 is the determined cDNA sequence for clone 26859.
SEQ ID NO: 655 is the determined cDNA sequence for clone 26860.
SEQ ID NO: 656 is the determined cDNA sequence for clone 26862.
SEQ ID NO: 657 is the determined cDNA sequence for clone 26863.
10 SEQ ID NO: 658 is the determined cDNA sequence for clone 26864.
SEQ ID NO: 659 is the determined cDNA sequence for clone 26865.
SEQ ID NO: 660 is the determined cDNA sequence for clone 26867.
SEQ ID NO: 661 is the determined cDNA sequence for clone 26868.
SEQ ID NO: 662 is the determined cDNA sequence for clone 26871.
15 SEQ ID NO: 663 is the determined cDNA sequence for clone 26873.
SEQ ID NO: 664 is the determined cDNA sequence for clone 26875.
SEQ ID NO: 665 is the determined cDNA sequence for clone 26876.
SEQ ID NO: 666 is the determined cDNA sequence for clone 26877.
SEQ ID NO: 667 is the determined cDNA sequence for clone 26878.
20 SEQ ID NO: 668 is the determined cDNA sequence for clone 26880.
SEQ ID NO: 669 is the determined cDNA sequence for clone 26882.
SEQ ID NO: 670 is the determined cDNA sequence for clone 26883.
SEQ ID NO: 671 is the determined cDNA sequence for clone 26884.
SEQ ID NO: 672 is the determined cDNA sequence for clone 26885.
25 SEQ ID NO: 673 is the determined cDNA sequence for clone 26886.
SEQ ID NO: 674 is the determined cDNA sequence for clone 26887.
SEQ ID NO: 675 is the determined cDNA sequence for clone 26888.
SEQ ID NO: 676 is the determined cDNA sequence for clone 26889.
SEQ ID NO: 677 is the determined cDNA sequence for clone 26890.
30 SEQ ID NO: 678 is the determined cDNA sequence for clone 26892.
SEQ ID NO: 679 is the determined cDNA sequence for clone 26894.

SEQ ID NO: 680 is the determined cDNA sequence for clone 26895.
SEQ ID NO: 681 is the determined cDNA sequence for clone 26897.
SEQ ID NO: 682 is the determined cDNA sequence for clone 26898.
SEQ ID NO: 683 is the determined cDNA sequence for clone 26899.
5 SEQ ID NO: 684 is the determined cDNA sequence for clone 26900.
SEQ ID NO: 685 is the determined cDNA sequence for clone 26901.
SEQ ID NO: 686 is the determined cDNA sequence for clone 26903.
SEQ ID NO: 687 is the determined cDNA sequence for clone 26905.
SEQ ID NO: 688 is the determined cDNA sequence for clone 26906.
10 SEQ ID NO: 689 is the determined cDNA sequence for clone 26708.
SEQ ID NO: 690 is the determined cDNA sequence for clone 26709.
SEQ ID NO: 691 is the determined cDNA sequence for clone 26710.
SEQ ID NO: 692 is the determined cDNA sequence for clone 26711.
SEQ ID NO: 693 is the determined cDNA sequence for clone 26712.
15 SEQ ID NO: 694 is the determined cDNA sequence for clone 26713.
SEQ ID NO: 695 is the determined cDNA sequence for clone 26714.
SEQ ID NO: 696 is the determined cDNA sequence for clone 26715.
SEQ ID NO: 697 is the determined cDNA sequence for clone 26716.
SEQ ID NO: 698 is the determined cDNA sequence for clone 26717.
20 SEQ ID NO: 699 is the determined cDNA sequence for clone 26718.
SEQ ID NO: 700 is the determined cDNA sequence for clone 26719.
SEQ ID NO: 701 is the determined cDNA sequence for clone 26720.
SEQ ID NO: 702 is the determined cDNA sequence for clone 26721.
SEQ ID NO: 703 is the determined cDNA sequence for clone 26722.
25 SEQ ID NO: 704 is the determined cDNA sequence for clone 26723.
SEQ ID NO: 705 is the determined cDNA sequence for clone 26724.
SEQ ID NO: 706 is the determined cDNA sequence for clone 26725.
SEQ ID NO: 707 is the determined cDNA sequence for clone 26726.
SEQ ID NO: 708 is the determined cDNA sequence for clone 26727.
30 SEQ ID NO: 709 is the determined cDNA sequence for clone 26728.
SEQ ID NO: 710 is the determined cDNA sequence for clone 26729.

SEQ ID NO: 711 is the determined cDNA sequence for clone 26730.
SEQ ID NO: 712 is the determined cDNA sequence for clone 26731.
SEQ ID NO: 713 is the determined cDNA sequence for clone 26732.
SEQ ID NO: 714 is the determined cDNA sequence for clone 26733.1.
5 SEQ ID NO: 715 is the determined cDNA sequence for clone 26733.2.
SEQ ID NO: 716 is the determined cDNA sequence for clone 26734.
SEQ ID NO: 717 is the determined cDNA sequence for clone 26735.
SEQ ID NO: 718 is the determined cDNA sequence for clone 26736.
SEQ ID NO: 719 is the determined cDNA sequence for clone 26737.
10 SEQ ID NO: 720 is the determined cDNA sequence for clone 26738.
SEQ ID NO: 721 is the determined cDNA sequence for clone 26739.
SEQ ID NO: 722 is the determined cDNA sequence for clone 26741.
SEQ ID NO: 723 is the determined cDNA sequence for clone 26742.
SEQ ID NO: 724 is the determined cDNA sequence for clone 26743.
15 SEQ ID NO: 725 is the determined cDNA sequence for clone 26744.
SEQ ID NO: 726 is the determined cDNA sequence for clone 26745.
SEQ ID NO: 727 is the determined cDNA sequence for clone 26746.
SEQ ID NO: 728 is the determined cDNA sequence for clone 26747.
SEQ ID NO: 729 is the determined cDNA sequence for clone 26748.
20 SEQ ID NO: 730 is the determined cDNA sequence for clone 26749.
SEQ ID NO: 731 is the determined cDNA sequence for clone 26750.
SEQ ID NO: 732 is the determined cDNA sequence for clone 26751.
SEQ ID NO: 733 is the determined cDNA sequence for clone 26752.
SEQ ID NO: 734 is the determined cDNA sequence for clone 26753.
25 SEQ ID NO: 735 is the determined cDNA sequence for clone 26754.
SEQ ID NO: 736 is the determined cDNA sequence for clone 26755.
SEQ ID NO: 737 is the determined cDNA sequence for clone 26756.
SEQ ID NO: 738 is the determined cDNA sequence for clone 26757.
SEQ ID NO: 739 is the determined cDNA sequence for clone 26758.
30 SEQ ID NO: 740 is the determined cDNA sequence for clone 26759.
SEQ ID NO: 741 is the determined cDNA sequence for clone 26760.

SEQ ID NO: 742 is the determined cDNA sequence for clone 26761.
SEQ ID NO: 743 is the determined cDNA sequence for clone 26762.
SEQ ID NO: 744 is the determined cDNA sequence for clone 26763.
SEQ ID NO: 745 is the determined cDNA sequence for clone 26764.
5 SEQ ID NO: 746 is the determined cDNA sequence for clone 26765.
SEQ ID NO: 747 is the determined cDNA sequence for clone 26766.
SEQ ID NO: 748 is the determined cDNA sequence for clone 26767.
SEQ ID NO: 749 is the determined cDNA sequence for clone 26768.
SEQ ID NO: 750 is the determined cDNA sequence for clone 26769.
10 SEQ ID NO: 751 is the determined cDNA sequence for clone 26770.
SEQ ID NO: 752 is the determined cDNA sequence for clone 26771.
SEQ ID NO: 753 is the determined cDNA sequence for clone 26772.
SEQ ID NO: 754 is the determined cDNA sequence for clone 26773.
SEQ ID NO: 755 is the determined cDNA sequence for clone 26774.
15 SEQ ID NO: 756 is the determined cDNA sequence for clone 26775.
SEQ ID NO: 757 is the determined cDNA sequence for clone 26776.
SEQ ID NO: 758 is the determined cDNA sequence for clone 26777.
SEQ ID NO: 759 is the determined cDNA sequence for clone 26778.
SEQ ID NO: 760 is the determined cDNA sequence for clone 26779.
20 SEQ ID NO: 761 is the determined cDNA sequence for clone 26781.
SEQ ID NO: 762 is the determined cDNA sequence for clone 26782.
SEQ ID NO: 763 is the determined cDNA sequence for clone 26783.
SEQ ID NO: 764 is the determined cDNA sequence for clone 26784.
SEQ ID NO: 765 is the determined cDNA sequence for clone 26785.
25 SEQ ID NO: 766 is the determined cDNA sequence for clone 26786.
SEQ ID NO: 767 is the determined cDNA sequence for clone 26787.
SEQ ID NO: 768 is the determined cDNA sequence for clone 26788.
SEQ ID NO: 769 is the determined cDNA sequence for clone 26790.
SEQ ID NO: 770 is the determined cDNA sequence for clone 26791.
30 SEQ ID NO: 771 is the determined cDNA sequence for clone 26792.
SEQ ID NO: 772 is the determined cDNA sequence for clone 26793.

SEQ ID NO: 773 is the determined cDNA sequence for clone 26794.
SEQ ID NO: 774 is the determined cDNA sequence for clone 26795.
SEQ ID NO: 775 is the determined cDNA sequence for clone 26796.
SEQ ID NO: 776 is the determined cDNA sequence for clone 26797.
5 SEQ ID NO: 777 is the determined cDNA sequence for clone 26798.
SEQ ID NO: 778 is the determined cDNA sequence for clone 26800.
SEQ ID NO: 779 is the determined cDNA sequence for clone 26801.
SEQ ID NO: 780 is the determined cDNA sequence for clone 26802.
SEQ ID NO: 781 is the determined cDNA sequence for clone 26803.
10 SEQ ID NO: 782 is the determined cDNA sequence for clone 26804.
SEQ ID NO: 783 is the amino acid sequence for L773P.
SEQ ID NO: 784 is the determined DNA sequence of the L773P
expression construct.
SEQ ID NO: 785 is the determined DNA sequence of the L773PA
15 expression construct.
SEQ ID NO: 786 is a predicted amino acid sequence for L552S.
SEQ ID NO: 787 is a predicted amino acid sequence for L840P.
SEQ ID NO: 788 is the full-length cDNA sequence for L548S.
SEQ ID NO: 789 is the amino acid sequence encoded by SEQ ID NO:
20 788.
SEQ ID NO: 790 is an extended cDNA sequence for L552S.
SEQ ID NO: 791 is the predicted amino acid sequence encoded by the
cDNA sequence of SEQ ID NO: 790.
SEQ ID NO: 792 is the determined cDNA sequence for an isoform of
25 L552S.
SEQ ID NO: 793 is the predicted amino acid sequence encoded by SEQ
ID NO: 792.
SEQ ID NO: 794 is an extended cDNA sequence for L840P.
SEQ ID NO: 795 is the predicted amino acid sequence encoded by SEQ
30 DI NO: 794.
SEQ ID NO: 796 is an extended cDNA sequence for L801P.

- SEQ ID NO: 797 is a first predicted amino acid sequence encoded by
SEQ ID NO: 796.
- SEQ ID NO: 798 is a second predicted amino acid sequence encoded by
SEQ ID NO: 796.
- 5 SEQ ID NO: 799 is a third predicted amino acid sequence encoded by
SEQ ID NO: 796.
- SEQ ID NO: 800 is the determined full-length sequence for L844P.
- SEQ ID NO: 801 is the 5' consensus cDNA sequence for L551S.
- SEQ ID NO: 802 is the 3' consensus cDNA sequence for L551S.
- 10 SEQ ID NO: 803 is the cDNA sequence for STY8.
- SEQ ID NO: 804 is an extended cDNA sequence for L551S.
- SEQ ID NO: 805 is the amino acid sequence for STY8.
- SEQ ID NO: 806 is the extended amino acid sequence for L551S.
- SEQ ID NO: 807 is the determined full-length cDNA sequence for
15 L773P.
- SEQ ID NO: 808 is the full-length cDNA sequence of L552S.
- SEQ ID NO: 809 is the full-length amino acid sequence of L552S.
- SEQ ID NO: 810 is the determined cDNA sequence of clone 50989.
- SEQ ID NO: 811 is the determined cDNA sequence of clone 50990.
- 20 SEQ ID NO: 812 is the determined cDNA sequence of clone 50992.
- SEQ ID NO: 813-824 are the determined cDNA sequences for clones
isolated from lung tumor tissue.
- SEQ ID NO: 825 is the determined cDNA sequence for the full-length
L551S clone 54305.
- 25 SEQ ID NO: 826 is the determined cDNA sequence for the full-length
L551S clone 54298.
- SEQ ID NO: 827 is the full-length amino acid sequence for L551S.

DETAILED DESCRIPTION OF THE INVENTION

As noted above, the present invention is generally directed to compositions and methods for using the compositions, for example in the therapy and diagnosis of cancer, such as lung cancer. Certain illustrative compositions described
5 herein include lung tumor polypeptides, polynucleotides encoding such polypeptides, binding agents such as antibodies, antigen presenting cells (APCs) and/or immune system cells (*e.g.*, T cells). A "lung tumor protein," as the term is used herein, refers generally to a protein that is expressed in lung tumor cells at a level that is at least two fold, and preferably at least five fold, greater than the level of expression in a normal
10 tissue, as determined using a representative assay provided herein. Certain lung tumor proteins are tumor proteins that react detectably (within an immunoassay, such as an ELISA or Western blot) with antisera of a patient afflicted with lung cancer.

Therefore, in accordance with the above, and as described further below, the present invention provides illustrative polynucleotide compositions having
15 sequences set forth in SEQ ID NO: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283,
20 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826, illustrative polypeptide compositions having amino acid sequences set forth in SEQ ID NO: 786, 787, 791, 793, 795, 797-799, 806, 809 and 827, antibody compositions capable of binding such polypeptides, and numerous additional embodiments employing such compositions, for example in the
25 detection, diagnosis and/or therapy of human lung cancer.

POLYNUCLEOTIDE COMPOSITIONS

As used herein, the terms "DNA segment" and "polynucleotide" refer to a DNA molecule that has been isolated free of total genomic DNA of a particular species. Therefore, a DNA segment encoding a polypeptide refers to a DNA segment
30 that contains one or more coding sequences yet is substantially isolated away from, or

purified free from, total genomic DNA of the species from which the DNA segment is obtained. Included within the terms "DNA segment" and "polynucleotide" are DNA segments and smaller fragments of such segments, and also recombinant vectors, including, for example, plasmids, cosmids, phagemids, phage, viruses, and the like.

5 As will be understood by those skilled in the art, the DNA segments of this invention can include genomic sequences, extra-genomic and plasmid-encoded sequences and smaller engineered gene segments that express, or may be adapted to express, proteins, polypeptides, peptides and the like. Such segments may be naturally isolated, or modified synthetically by the hand of man.

10 "Isolated," as used herein, means that a polynucleotide is substantially away from other coding sequences, and that the DNA segment does not contain large portions of unrelated coding DNA, such as large chromosomal fragments or other functional genes or polypeptide coding regions. Of course, this refers to the DNA segment as originally isolated, and does not exclude genes or coding regions later added
15 to the segment by the hand of man.

 As will be recognized by the skilled artisan, polynucleotides may be single-stranded (coding or antisense) or double-stranded, and may be DNA (genomic, cDNA or synthetic) or RNA molecules. RNA molecules include HnRNA molecules, which contain introns and correspond to a DNA molecule in a one-to-one manner, and
20 mRNA molecules, which do not contain introns. Additional coding or non-coding sequences may, but need not, be present within a polynucleotide of the present invention, and a polynucleotide may, but need not, be linked to other molecules and/or support materials.

 Polynucleotides may comprise a native sequence (*i.e.*, an endogenous
25 sequence that encodes a lung tumor protein or a portion thereof) or may comprise a variant, or a biological or antigenic functional equivalent of such a sequence. Polynucleotide variants may contain one or more substitutions, additions, deletions and/or insertions, as further described below, preferably such that the immunogenicity of the encoded polypeptide is not diminished, relative to a native tumor protein. The
30 effect on the immunogenicity of the encoded polypeptide may generally be assessed as

described herein. The term “variants” also encompasses homologous genes of xenogenic origin.

When comparing polynucleotide or polypeptide sequences, two sequences are said to be “identical” if the sequence of nucleotides or amino acids in the two sequences is the same when aligned for maximum correspondence, as described below. Comparisons between two sequences are typically performed by comparing the sequences over a comparison window to identify and compare local regions of sequence similarity. A “comparison window” as used herein, refers to a segment of at least about 20 contiguous positions, usually 30 to about 75, 40 to about 50, in which a sequence may be compared to a reference sequence of the same number of contiguous positions after the two sequences are optimally aligned.

Optimal alignment of sequences for comparison may be conducted using the Megalign program in the Lasergene suite of bioinformatics software (DNASTAR, Inc., Madison, WI), using default parameters. This program embodies several alignment schemes described in the following references: Dayhoff, M.O. (1978) A model of evolutionary change in proteins – Matrices for detecting distant relationships. In Dayhoff, M.O. (ed.) *Atlas of Protein Sequence and Structure*, National Biomedical Research Foundation, Washington DC Vol. 5, Suppl. 3, pp. 345-358; Hein J. (1990) Unified Approach to Alignment and Phylogenies pp. 626-645 *Methods in Enzymology* vol. 183, Academic Press, Inc., San Diego, CA; Higgins, D.G. and Sharp, P.M. (1989) *CABIOS* 5:151-153; Myers, E.W. and Muller W. (1988) *CABIOS* 4:11-17; Robinson, E.D. (1971) *Comb. Theor* 11:105; Santou, N. Nes, M. (1987) *Mol. Biol. Evol.* 4:406-425; Sneath, P.H.A. and Sokal, R.R. (1973) *Numerical Taxonomy – the Principles and Practice of Numerical Taxonomy*, Freeman Press, San Francisco, CA; Wilbur, W.J. and Lipman, D.J. (1983) *Proc. Natl. Acad. Sci. USA* 80:726-730.

Alternatively, optimal alignment of sequences for comparison may be conducted by the local identity algorithm of Smith and Waterman (1981) *Add. APL. Math* 2:482, by the identity alignment algorithm of Needleman and Wunsch (1970) *J. Mol. Biol.* 48:443, by the search for similarity methods of Pearson and Lipman (1988) *Proc. Natl. Acad. Sci. USA* 85: 2444, by computerized implementations of these algorithms (GAP, BESTFIT, BLAST, FASTA, and TFASTA in the Wisconsin Genetics

Software Package, Genetics Computer Group (GCG), 575 Science Dr., Madison, WI), or by inspection.

One preferred example of algorithms that are suitable for determining percent sequence identity and sequence similarity are the BLAST and BLAST 2.0 algorithms, which are described in Altschul *et al.* (1977) *Nucl. Acids Res.* 25:3389-3402 and Altschul *et al.* (1990) *J. Mol. Biol.* 215:403-410, respectively. BLAST and BLAST 2.0 can be used, for example with the parameters described herein, to determine percent sequence identity for the polynucleotides and polypeptides of the invention. Software for performing BLAST analyses is publicly available through the National Center for Biotechnology Information. In one illustrative example, cumulative scores can be calculated using, for nucleotide sequences, the parameters M (reward score for a pair of matching residues; always >0) and N (penalty score for mismatching residues; always <0). For amino acid sequences, a scoring matrix can be used to calculate the cumulative score. Extension of the word hits in each direction are halted when: the cumulative alignment score falls off by the quantity X from its maximum achieved value; the cumulative score goes to zero or below, due to the accumulation of one or more negative-scoring residue alignments; or the end of either sequence is reached. The BLAST algorithm parameters W, T and X determine the sensitivity and speed of the alignment. The BLASTN program (for nucleotide sequences) uses as defaults a wordlength (W) of 11, and expectation (E) of 10, and the BLOSUM62 scoring matrix (see Henikoff and Henikoff (1989) *Proc. Natl. Acad. Sci. USA* 89:10915) alignments, (B) of 50, expectation (E) of 10, M=5, N=-4 and a comparison of both strands.

Preferably, the "percentage of sequence identity" is determined by comparing two optimally aligned sequences over a window of comparison of at least 20 positions, wherein the portion of the polynucleotide or polypeptide sequence in the comparison window may comprise additions or deletions (*i.e.*, gaps) of 20 percent or less, usually 5 to 15 percent, or 10 to 12 percent, as compared to the reference sequences (which does not comprise additions or deletions) for optimal alignment of the two sequences. The percentage is calculated by determining the number of positions at which the identical nucleic acid bases or amino acid residue occurs in both sequences to yield the number of matched positions, dividing the number of matched positions by the

total number of positions in the reference sequence (*i.e.*, the window size) and multiplying the results by 100 to yield the percentage of sequence identity.

Therefore, the present invention encompasses polynucleotide and polypeptide sequences having substantial identity to the sequences disclosed herein, for example those comprising at least 50% sequence identity, preferably at least 55%, 60%, 65%, 70%, 75%, 80%, 85%, 90%, 95%, 96%, 97%, 98%, or 99% or higher, sequence identity compared to a polynucleotide or polypeptide sequence of this invention using the methods described herein, (*e.g.*, BLAST analysis using standard parameters, as described below). One skilled in this art will recognize that these values can be appropriately adjusted to determine corresponding identity of proteins encoded by two nucleotide sequences by taking into account codon degeneracy, amino acid similarity, reading frame positioning and the like.

In additional embodiments, the present invention provides isolated polynucleotides and polypeptides comprising various lengths of contiguous stretches of sequence identical to or complementary to one or more of the sequences disclosed herein. For example, polynucleotides are provided by this invention that comprise at least about 15, 20, 30, 40, 50, 75, 100, 150, 200, 300, 400, 500 or 1000 or more contiguous nucleotides of one or more of the sequences disclosed herein as well as all intermediate lengths there between. It will be readily understood that "intermediate lengths", in this context, means any length between the quoted values, such as 16, 17, 18, 19, *etc.*; 21, 22, 23, *etc.*; 30, 31, 32, *etc.*; 50, 51, 52, 53, *etc.*; 100, 101, 102, 103, *etc.*; 150, 151, 152, 153, *etc.*; including all integers through 200-500; 500-1,000, and the like.

The polynucleotides of the present invention, or fragments thereof, regardless of the length of the coding sequence itself, may be combined with other DNA sequences, such as promoters, polyadenylation signals, additional restriction enzyme sites, multiple cloning sites, other coding segments, and the like, such that their overall length may vary considerably. It is therefore contemplated that a nucleic acid fragment of almost any length may be employed, with the total length preferably being limited by the ease of preparation and use in the intended recombinant DNA protocol. For example, illustrative DNA segments with total lengths of about 10,000, about 5000,

about 3000, about 2,000, about 1,000, about 500, about 200, about 100, about 50 base pairs in length, and the like, (including all intermediate lengths) are contemplated to be useful in many implementations of this invention.

In other embodiments, the present invention is directed to
5 polynucleotides that are capable of hybridizing under moderately stringent conditions to a polynucleotide sequence provided herein, or a fragment thereof, or a complementary sequence thereof. Hybridization techniques are well known in the art of molecular biology. For purposes of illustration, suitable moderately stringent conditions for testing the hybridization of a polynucleotide of this invention with other
10 polynucleotides include prewashing in a solution of 5 X SSC, 0.5% SDS, 1.0 mM EDTA (pH 8.0); hybridizing at 50°C-65°C, 5 X SSC, overnight; followed by washing twice at 65°C for 20 minutes with each of 2X, 0.5X and 0.2X SSC containing 0.1% SDS.

Moreover, it will be appreciated by those of ordinary skill in the art that,
15 as a result of the degeneracy of the genetic code, there are many nucleotide sequences that encode a polypeptide as described herein. Some of these polynucleotides bear minimal homology to the nucleotide sequence of any native gene. Nonetheless, polynucleotides that vary due to differences in codon usage are specifically contemplated by the present invention. Further, alleles of the genes comprising the
20 polynucleotide sequences provided herein are within the scope of the present invention. Alleles are endogenous genes that are altered as a result of one or more mutations, such as deletions, additions and/or substitutions of nucleotides. The resulting mRNA and protein may, but need not, have an altered structure or function. Alleles may be identified using standard techniques (such as hybridization, amplification and/or
25 database sequence comparison).

PROBES AND PRIMERS

In other embodiments of the present invention, the polynucleotide sequences provided herein can be advantageously used as probes or primers for nucleic acid hybridization. As such, it is contemplated that nucleic acid segments that comprise
30 a sequence region of at least about 15 nucleotide long contiguous sequence that has the

same sequence as, or is complementary to, a 15 nucleotide long contiguous sequence disclosed herein will find particular utility. Longer contiguous identical or complementary sequences, *e.g.*, those of about 20, 30, 40, 50, 100, 200, 500, 1000 (including all intermediate lengths) and even up to full length sequences will also be of
5 use in certain embodiments.

The ability of such nucleic acid probes to specifically hybridize to a sequence of interest will enable them to be of use in detecting the presence of complementary sequences in a given sample. However, other uses are also envisioned, such as the use of the sequence information for the preparation of mutant species
10 primers, or primers for use in preparing other genetic constructions.

Polynucleotide molecules having sequence regions consisting of contiguous nucleotide stretches of 10-14, 15-20, 30, 50, or even of 100-200 nucleotides or so (including intermediate lengths as well), identical or complementary to a polynucleotide sequence disclosed herein, are particularly contemplated as
15 hybridization probes for use in, *e.g.*, Southern and Northern blotting. This would allow a gene product, or fragment thereof, to be analyzed, both in diverse cell types and also in various bacterial cells. The total size of fragment, as well as the size of the complementary stretch(es), will ultimately depend on the intended use or application of the particular nucleic acid segment. Smaller fragments will generally find use in
20 hybridization embodiments, wherein the length of the contiguous complementary region may be varied, such as between about 15 and about 100 nucleotides, but larger contiguous complementarity stretches may be used, according to the length complementary sequences one wishes to detect.

The use of a hybridization probe of about 15-25 nucleotides in length
25 allows the formation of a duplex molecule that is both stable and selective. Molecules having contiguous complementary sequences over stretches greater than 15 bases in length are generally preferred, though, in order to increase stability and selectivity of the hybrid, and thereby improve the quality and degree of specific hybrid molecules obtained. One will generally prefer to design nucleic acid molecules having gene-
30 complementary stretches of 15 to 25 contiguous nucleotides, or even longer where desired.

Hybridization probes may be selected from any portion of any of the sequences disclosed herein. All that is required is to review the sequence set forth in SEQ ID NO: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826, or to any continuous portion of the sequence, from about 15-25 nucleotides in length up to and including the full length sequence, that one wishes to utilize as a probe or primer. The choice of probe and primer sequences may be governed by various factors. For example, one may wish to employ primers from towards the termini of the total sequence.

Small polynucleotide segments or fragments may be readily prepared by, for example, directly synthesizing the fragment by chemical means, as is commonly practiced using an automated oligonucleotide synthesizer. Also, fragments may be obtained by application of nucleic acid reproduction technology, such as the PCRTM technology of U. S. Patent 4,683,202 (incorporated herein by reference), by introducing selected sequences into recombinant vectors for recombinant production, and by other recombinant DNA techniques generally known to those of skill in the art of molecular biology.

The nucleotide sequences of the invention may be used for their ability to selectively form duplex molecules with complementary stretches of the entire gene or gene fragments of interest. Depending on the application envisioned, one will typically desire to employ varying conditions of hybridization to achieve varying degrees of selectivity of probe towards target sequence. For applications requiring high selectivity, one will typically desire to employ relatively stringent conditions to form the hybrids, *e.g.*, one will select relatively low salt and/or high temperature conditions, such as provided by a salt concentration of from about 0.02 M to about 0.15 M salt at temperatures of from about 50°C to about 70°C. Such selective conditions tolerate

little, if any, mismatch between the probe and the template or target strand, and would be particularly suitable for isolating related sequences.

Of course, for some applications, for example, where one desires to prepare mutants employing a mutant primer strand hybridized to an underlying
5 template, less stringent (reduced stringency) hybridization conditions will typically be needed in order to allow formation of the heteroduplex. In these circumstances, one may desire to employ salt conditions such as those of from about 0.15 M to about 0.9 M salt, at temperatures ranging from about 20°C to about 55°C. Cross-hybridizing species can thereby be readily identified as positively hybridizing signals with respect to control
10 hybridizations. In any case, it is generally appreciated that conditions can be rendered more stringent by the addition of increasing amounts of formamide, which serves to destabilize the hybrid duplex in the same manner as increased temperature. Thus, hybridization conditions can be readily manipulated, and thus will generally be a method of choice depending on the desired results.

15 POLYNUCLEOTIDE IDENTIFICATION AND CHARACTERIZATION

Polynucleotides may be identified, prepared and/or manipulated using any of a variety of well established techniques. For example, a polynucleotide may be identified, as described in more detail below, by screening a microarray of cDNAs for tumor-associated expression (*i.e.*, expression that is at least two fold greater in a tumor
20 than in normal tissue, as determined using a representative assay provided herein). Such screens may be performed, for example, using a Synteni microarray (Palo Alto, CA) according to the manufacturer's instructions (and essentially as described by Schena *et al.*, *Proc. Natl. Acad. Sci. USA* 93:10614-10619, 1996 and Heller *et al.*, *Proc. Natl. Acad. Sci. USA* 94:2150-2155, 1997). Alternatively, polynucleotides may be
25 amplified from cDNA prepared from cells expressing the proteins described herein, such as lung tumor cells. Such polynucleotides may be amplified via polymerase chain reaction (PCR). For this approach, sequence-specific primers may be designed based on the sequences provided herein, and may be purchased or synthesized.

An amplified portion of a polynucleotide of the present invention may be
30 used to isolate a full length gene from a suitable library (*e.g.*, a lung tumor cDNA

library) using well known techniques. Within such techniques, a library (cDNA or genomic) is screened using one or more polynucleotide probes or primers suitable for amplification. Preferably, a library is size-selected to include larger molecules. Random primed libraries may also be preferred for identifying 5' and upstream regions of genes. Genomic libraries are preferred for obtaining introns and extending 5' sequences.

For hybridization techniques, a partial sequence may be labeled (*e.g.*, by nick-translation or end-labeling with ^{32}P) using well known techniques. A bacterial or bacteriophage library is then generally screened by hybridizing filters containing denatured bacterial colonies (or lawns containing phage plaques) with the labeled probe (see Sambrook *et al.*, *Molecular Cloning: A Laboratory Manual*, Cold Spring Harbor Laboratories, Cold Spring Harbor, NY, 1989). Hybridizing colonies or plaques are selected and expanded, and the DNA is isolated for further analysis. cDNA clones may be analyzed to determine the amount of additional sequence by, for example, PCR using a primer from the partial sequence and a primer from the vector. Restriction maps and partial sequences may be generated to identify one or more overlapping clones. The complete sequence may then be determined using standard techniques, which may involve generating a series of deletion clones. The resulting overlapping sequences can then be assembled into a single contiguous sequence. A full length cDNA molecule can be generated by ligating suitable fragments, using well known techniques.

Alternatively, there are numerous amplification techniques for obtaining a full length coding sequence from a partial cDNA sequence. Within such techniques, amplification is generally performed via PCR. Any of a variety of commercially available kits may be used to perform the amplification step. Primers may be designed using, for example, software well known in the art. Primers are preferably 22-30 nucleotides in length, have a GC content of at least 50% and anneal to the target sequence at temperatures of about 68°C to 72°C. The amplified region may be sequenced as described above, and overlapping sequences assembled into a contiguous sequence.

One such amplification technique is inverse PCR (see Triglia *et al.*, *Nucl. Acids Res.* 16:8186, 1988), which uses restriction enzymes to generate a fragment

in the known region of the gene. The fragment is then circularized by intramolecular ligation and used as a template for PCR with divergent primers derived from the known region. Within an alternative approach, sequences adjacent to a partial sequence may be retrieved by amplification with a primer to a linker sequence and a primer specific to a known region. The amplified sequences are typically subjected to a second round of amplification with the same linker primer and a second primer specific to the known region. A variation on this procedure, which employs two primers that initiate extension in opposite directions from the known sequence, is described in WO 96/38591. Another such technique is known as "rapid amplification of cDNA ends" or RACE. This technique involves the use of an internal primer and an external primer, which hybridizes to a polyA region or vector sequence, to identify sequences that are 5' and 3' of a known sequence. Additional techniques include capture PCR (Lagerstrom *et al.*, *PCR Methods Applic. 1*:111-19, 1991) and walking PCR (Parker *et al.*, *Nucl. Acids. Res. 19*:3055-60, 1991). Other methods employing amplification may also be employed to obtain a full length cDNA sequence.

In certain instances, it is possible to obtain a full length cDNA sequence by analysis of sequences provided in an expressed sequence tag (EST) database, such as that available from GenBank. Searches for overlapping ESTs may generally be performed using well known programs (*e.g.*, NCBI BLAST searches), and such ESTs may be used to generate a contiguous full length sequence. Full length DNA sequences may also be obtained by analysis of genomic fragments.

POLYNUCLEOTIDE EXPRESSION IN HOST CELLS

In other embodiments of the invention, polynucleotide sequences or fragments thereof which encode polypeptides of the invention, or fusion proteins or functional equivalents thereof, may be used in recombinant DNA molecules to direct expression of a polypeptide in appropriate host cells. Due to the inherent degeneracy of the genetic code, other DNA sequences that encode substantially the same or a functionally equivalent amino acid sequence may be produced and these sequences may be used to clone and express a given polypeptide.

As will be understood by those of skill in the art, it may be advantageous in some instances to produce polypeptide-encoding nucleotide sequences possessing non-naturally occurring codons. For example, codons preferred by a particular prokaryotic or eukaryotic host can be selected to increase the rate of protein expression or to produce a recombinant RNA transcript having desirable properties, such as a half-life which is longer than that of a transcript generated from the naturally occurring sequence.

Moreover, the polynucleotide sequences of the present invention can be engineered using methods generally known in the art in order to alter polypeptide encoding sequences for a variety of reasons, including but not limited to, alterations which modify the cloning, processing, and/or expression of the gene product. For example, DNA shuffling by random fragmentation and PCR reassembly of gene fragments and synthetic oligonucleotides may be used to engineer the nucleotide sequences. In addition, site-directed mutagenesis may be used to insert new restriction sites, alter glycosylation patterns, change codon preference, produce splice variants, or introduce mutations, and so forth.

In another embodiment of the invention, natural, modified, or recombinant nucleic acid sequences may be ligated to a heterologous sequence to encode a fusion protein. For example, to screen peptide libraries for inhibitors of polypeptide activity, it may be useful to encode a chimeric protein that can be recognized by a commercially available antibody. A fusion protein may also be engineered to contain a cleavage site located between the polypeptide-encoding sequence and the heterologous protein sequence, so that the polypeptide may be cleaved and purified away from the heterologous moiety.

Sequences encoding a desired polypeptide may be synthesized, in whole or in part, using chemical methods well known in the art (see Caruthers, M. H. *et al.* (1980) *Nucl. Acids Res. Symp. Ser.* 215-223, Horn, T. *et al.* (1980) *Nucl. Acids Res. Symp. Ser.* 225-232). Alternatively, the protein itself may be produced using chemical methods to synthesize the amino acid sequence of a polypeptide, or a portion thereof. For example, peptide synthesis can be performed using various solid-phase techniques (Roberge, J. Y. *et al.* (1995) *Science* 269:202-204) and automated synthesis may be

achieved, for example, using the ABI 431A Peptide Synthesizer (Perkin Elmer, Palo Alto, CA).

A newly synthesized peptide may be substantially purified by preparative high performance liquid chromatography (*e.g.*, Creighton, T. (1983) 5 Proteins, Structures and Molecular Principles, WH Freeman and Co., New York, N.Y.) or other comparable techniques available in the art. The composition of the synthetic peptides may be confirmed by amino acid analysis or sequencing (*e.g.*, the Edman degradation procedure). Additionally, the amino acid sequence of a polypeptide, or any part thereof, may be altered during direct synthesis and/or combined using chemical 10 methods with sequences from other proteins, or any part thereof, to produce a variant polypeptide.

In order to express a desired polypeptide, the nucleotide sequences encoding the polypeptide, or functional equivalents, may be inserted into appropriate expression vector, *i.e.*, a vector which contains the necessary elements for the 15 transcription and translation of the inserted coding sequence. Methods which are well known to those skilled in the art may be used to construct expression vectors containing sequences encoding a polypeptide of interest and appropriate transcriptional and translational control elements. These methods include *in vitro* recombinant DNA techniques, synthetic techniques, and *in vivo* genetic recombination. Such techniques 20 are described in Sambrook, J. *et al.* (1989) Molecular Cloning, A Laboratory Manual, Cold Spring Harbor Press, Plainview, N.Y., and Ausubel, F. M. *et al.* (1989) Current Protocols in Molecular Biology, John Wiley & Sons, New York, N.Y.

A variety of expression vector/host systems may be utilized to contain and express polynucleotide sequences. These include, but are not limited to, 25 microorganisms such as bacteria transformed with recombinant bacteriophage, plasmid, or cosmid DNA expression vectors; yeast transformed with yeast expression vectors; insect cell systems infected with virus expression vectors (*e.g.*, baculovirus); plant cell systems transformed with virus expression vectors (*e.g.*, cauliflower mosaic virus, CaMV; tobacco mosaic virus, TMV) or with bacterial expression vectors (*e.g.*, Ti or 30 pBR322 plasmids); or animal cell systems.

The "control elements" or "regulatory sequences" present in an expression vector are those non-translated regions of the vector--enhancers, promoters, 5' and 3' untranslated regions--which interact with host cellular proteins to carry out transcription and translation. Such elements may vary in their strength and specificity.

5 Depending on the vector system and host utilized, any number of suitable transcription and translation elements, including constitutive and inducible promoters, may be used. For example, when cloning in bacterial systems, inducible promoters such as the hybrid lacZ promoter of the PBLUESCRIPT phagemid (Stratagene, La Jolla, Calif.) or PSPORT1 plasmid (Gibco BRL, Gaithersburg, MD) and the like may be used. In

10 mammalian cell systems, promoters from mammalian genes or from mammalian viruses are generally preferred. If it is necessary to generate a cell line that contains multiple copies of the sequence encoding a polypeptide, vectors based on SV40 or EBV may be advantageously used with an appropriate selectable marker.

In bacterial systems, a number of expression vectors may be selected

15 depending upon the use intended for the expressed polypeptide. For example, when large quantities are needed, for example for the induction of antibodies, vectors which direct high level expression of fusion proteins that are readily purified may be used. Such vectors include, but are not limited to, the multifunctional *E. coli* cloning and expression vectors such as BLUESCRIPT (Stratagene), in which the sequence encoding

20 the polypeptide of interest may be ligated into the vector in frame with sequences for the amino-terminal Met and the subsequent 7 residues of .beta.-galactosidase so that a hybrid protein is produced; pIN vectors (Van Heeke, G. and S. M. Schuster (1989) *J. Biol. Chem.* 264:5503-5509); and the like. pGEX Vectors (Promega, Madison, Wis.) may also be used to express foreign polypeptides as fusion proteins with glutathione S-

25 transferase (GST). In general, such fusion proteins are soluble and can easily be purified from lysed cells by adsorption to glutathione-agarose beads followed by elution in the presence of free glutathione. Proteins made in such systems may be designed to include heparin, thrombin, or factor XA protease cleavage sites so that the cloned polypeptide of interest can be released from the GST moiety at will.

30 In the yeast, *Saccharomyces cerevisiae*, a number of vectors containing constitutive or inducible promoters such as alpha factor, alcohol oxidase, and PGH may

be used. For reviews, see Ausubel *et al.* (supra) and Grant *et al.* (1987) *Methods Enzymol.* 153:516-544.

In cases where plant expression vectors are used, the expression of sequences encoding polypeptides may be driven by any of a number of promoters. For example, viral promoters such as the 35S and 19S promoters of CaMV may be used alone or in combination with the omega leader sequence from TMV (Takamatsu, N. (1987) *EMBO J.* 6:307-311. Alternatively, plant promoters such as the small subunit of RUBISCO or heat shock promoters may be used (Coruzzi, G. *et al.* (1984) *EMBO J.* 3:1671-1680; Broglie, R. *et al.* (1984) *Science* 224:838-843; and Winter, J. *et al.* (1991) *Results Probl. Cell Differ.* 17:85-105). These constructs can be introduced into plant cells by direct DNA transformation or pathogen-mediated transfection. Such techniques are described in a number of generally available reviews (see, for example, Hobbs, S. or Murry, L. E. in McGraw Hill Yearbook of Science and Technology (1992) McGraw Hill, New York, N.Y.; pp. 191-196).

An insect system may also be used to express a polypeptide of interest. For example, in one such system, Autographa californica nuclear polyhedrosis virus (AcNPV) is used as a vector to express foreign genes in *Spodoptera frugiperda* cells or in *Trichoplusia* larvae. The sequences encoding the polypeptide may be cloned into a non-essential region of the virus, such as the polyhedrin gene, and placed under control of the polyhedrin promoter. Successful insertion of the polypeptide-encoding sequence will render the polyhedrin gene inactive and produce recombinant virus lacking coat protein. The recombinant viruses may then be used to infect, for example, *S. frugiperda* cells or *Trichoplusia* larvae in which the polypeptide of interest may be expressed (Engelhard, E. K. *et al.* (1994) *Proc. Natl. Acad. Sci.* 91 :3224-3227).

In mammalian host cells, a number of viral-based expression systems are generally available. For example, in cases where an adenovirus is used as an expression vector, sequences encoding a polypeptide of interest may be ligated into an adenovirus transcription/translation complex consisting of the late promoter and tripartite leader sequence. Insertion in a non-essential E1 or E3 region of the viral genome may be used to obtain a viable virus which is capable of expressing the polypeptide in infected host cells (Logan, J. and Shenk, T. (1984) *Proc. Natl. Acad. Sci.* 81:3655-3659). In addition,

transcription enhancers, such as the Rous sarcoma virus (RSV) enhancer, may be used to increase expression in mammalian host cells.

Specific initiation signals may also be used to achieve more efficient translation of sequences encoding a polypeptide of interest. Such signals include the
5 ATG initiation codon and adjacent sequences. In cases where sequences encoding the polypeptide, its initiation codon, and upstream sequences are inserted into the appropriate expression vector, no additional transcriptional or translational control signals may be needed. However, in cases where only coding sequence, or a portion thereof, is inserted, exogenous translational control signals including the ATG initiation
10 codon should be provided. Furthermore, the initiation codon should be in the correct reading frame to ensure translation of the entire insert. Exogenous translational elements and initiation codons may be of various origins, both natural and synthetic. The efficiency of expression may be enhanced by the inclusion of enhancers which are appropriate for the particular cell system which is used, such as those described in the
15 literature (Scharf, D. *et al.* (1994) *Results Probl. Cell Differ.* 20:125-162).

In addition, a host cell strain may be chosen for its ability to modulate the expression of the inserted sequences or to process the expressed protein in the desired fashion. Such modifications of the polypeptide include, but are not limited to, acetylation, carboxylation, glycosylation, phosphorylation, lipidation, and acylation.
20 Post-translational processing which cleaves a "prepro" form of the protein may also be used to facilitate correct insertion, folding and/or function. Different host cells such as CHO, HeLa, MDCK, HEK293, and WI38, which have specific cellular machinery and characteristic mechanisms for such post-translational activities, may be chosen to ensure the correct modification and processing of the foreign protein.

25 For long-term, high-yield production of recombinant proteins, stable expression is generally preferred. For example, cell lines which stably express a polynucleotide of interest may be transformed using expression vectors which may contain viral origins of replication and/or endogenous expression elements and a selectable marker gene on the same or on a separate vector. Following the introduction
30 of the vector, cells may be allowed to grow for 1-2 days in an enriched media before they are switched to selective media. The purpose of the selectable marker is to confer

resistance to selection, and its presence allows growth and recovery of cells which successfully express the introduced sequences. Resistant clones of stably transformed cells may be proliferated using tissue culture techniques appropriate to the cell type.

Any number of selection systems may be used to recover transformed
5 cell lines. These include, but are not limited to, the herpes simplex virus thymidine kinase (Wigler, M. *et al.* (1977) *Cell* 11:223-32) and adenine phosphoribosyltransferase (Lowy, I. *et al.* (1990) *Cell* 22:817-23) genes which can be employed in tk.sup.- or aprt.sup.- cells, respectively. Also, antimetabolite, antibiotic or herbicide resistance can be used as the basis for selection; for example, dhfr which confers resistance to
10 methotrexate (Wigler, M. *et al.* (1980) *Proc. Natl. Acad. Sci.* 77:3567-70); npt, which confers resistance to the aminoglycosides, neomycin and G-418 (Colbere-Garapin, F. *et al.* (1981) *J. Mol. Biol.* 150:1-14); and als or pat, which confer resistance to chlorsulfuron and phosphinotricin acetyltransferase, respectively (Murry, *supra*). Additional selectable genes have been described, for example, trpB, which allows cells
15 to utilize indole in place of tryptophan, or hisD, which allows cells to utilize histinol in place of histidine (Hartman, S. C. and R. C. Mulligan (1988) *Proc. Natl. Acad. Sci.* 85:8047-51). Recently, the use of visible markers has gained popularity with such markers as anthocyanins, beta-glucuronidase and its substrate GUS, and luciferase and its substrate luciferin, being widely used not only to identify transformants, but also to
20 quantify the amount of transient or stable protein expression attributable to a specific vector system (Rhodes, C. A. *et al.* (1995) *Methods Mol. Biol.* 55:121-131).

Although the presence/absence of marker gene expression suggests that the gene of interest is also present, its presence and expression may need to be confirmed. For example, if the sequence encoding a polypeptide is inserted within a
25 marker gene sequence, recombinant cells containing sequences can be identified by the absence of marker gene function. Alternatively, a marker gene can be placed in tandem with a polypeptide-encoding sequence under the control of a single promoter. Expression of the marker gene in response to induction or selection usually indicates expression of the tandem gene as well.

30 Alternatively, host cells which contain and express a desired polynucleotide sequence may be identified by a variety of procedures known to those of

skill in the art. These procedures include, but are not limited to, DNA-DNA or DNA-RNA hybridizations and protein bioassay or immunoassay techniques which include membrane, solution, or chip based technologies for the detection and/or quantification of nucleic acid or protein.

5 A variety of protocols for detecting and measuring the expression of polynucleotide-encoded products, using either polyclonal or monoclonal antibodies specific for the product are known in the art. Examples include enzyme-linked immunosorbent assay (ELISA), radioimmunoassay (RIA), and fluorescence activated cell sorting (FACS). A two-site, monoclonal-based immunoassay utilizing monoclonal
10 antibodies reactive to two non-interfering epitopes on a given polypeptide may be preferred for some applications, but a competitive binding assay may also be employed. These and other assays are described, among other places, in Hampton, R. *et al.* (1990; *Serological Methods, a Laboratory Manual*, APS Press, St Paul, Minn.) and Maddox, D. E. *et al.* (1983; *J. Exp. Med.* 158:1211-1216).

15 A wide variety of labels and conjugation techniques are known by those skilled in the art and may be used in various nucleic acid and amino acid assays. Means for producing labeled hybridization or PCR probes for detecting sequences related to polynucleotides include oligolabeling, nick translation, end-labeling or PCR amplification using a labeled nucleotide. Alternatively, the sequences, or any portions
20 thereof may be cloned into a vector for the production of an mRNA probe. Such vectors are known in the art, are commercially available, and may be used to synthesize RNA probes in vitro by addition of an appropriate RNA polymerase such as T7, T3, or SP6 and labeled nucleotides. These procedures may be conducted using a variety of commercially available kits. Suitable reporter molecules or labels, which may be used
25 include radionuclides, enzymes, fluorescent, chemiluminescent, or chromogenic agents as well as substrates, cofactors, inhibitors, magnetic particles, and the like.

Host cells transformed with a polynucleotide sequence of interest may be cultured under conditions suitable for the expression and recovery of the protein from cell culture. The protein produced by a recombinant cell may be secreted or contained
30 intracellularly depending on the sequence and/or the vector used. As will be understood by those of skill in the art, expression vectors containing polynucleotides of the

invention may be designed to contain signal sequences which direct secretion of the encoded polypeptide through a prokaryotic or eukaryotic cell membrane. Other recombinant constructions may be used to join sequences encoding a polypeptide of interest to nucleotide sequence encoding a polypeptide domain which will facilitate purification of soluble proteins. Such purification facilitating domains include, but are not limited to, metal chelating peptides such as histidine-tryptophan modules that allow purification on immobilized metals, protein A domains that allow purification on immobilized immunoglobulin, and the domain utilized in the FLAGS extension/affinity purification system (Immunex Corp., Seattle, Wash.). The inclusion of cleavable linker sequences such as those specific for Factor XA or enterokinase (Invitrogen, San Diego, Calif.) between the purification domain and the encoded polypeptide may be used to facilitate purification. One such expression vector provides for expression of a fusion protein containing a polypeptide of interest and a nucleic acid encoding 6 histidine residues preceding a thioredoxin or an enterokinase cleavage site. The histidine residues facilitate purification on IMIAC (immobilized metal ion affinity chromatography) as described in Porath, J. *et al.* (1992, *Prot. Exp. Purif.* 3:263-281) while the enterokinase cleavage site provides a means for purifying the desired polypeptide from the fusion protein. A discussion of vectors which contain fusion proteins is provided in Kroll, D. J. *et al.* (1993; *DNA Cell Biol.* 12:441-453).

In addition to recombinant production methods, polypeptides of the invention, and fragments thereof, may be produced by direct peptide synthesis using solid-phase techniques (Merrifield J. (1963) *J. Am. Chem. Soc.* 85:2149-2154). Protein synthesis may be performed using manual techniques or by automation. Automated synthesis may be achieved, for example, using Applied Biosystems 431A Peptide Synthesizer (Perkin Elmer). Alternatively, various fragments may be chemically synthesized separately and combined using chemical methods to produce the full length molecule.

SITE-SPECIFIC MUTAGENESIS

Site-specific mutagenesis is a technique useful in the preparation of individual peptides, or biologically functional equivalent polypeptides, through specific

mutagenesis of the underlying polynucleotides that encode them. The technique, well-known to those of skill in the art, further provides a ready ability to prepare and test sequence variants, for example, incorporating one or more of the foregoing considerations, by introducing one or more nucleotide sequence changes into the DNA.

5 Site-specific mutagenesis allows the production of mutants through the use of specific oligonucleotide sequences which encode the DNA sequence of the desired mutation, as well as a sufficient number of adjacent nucleotides, to provide a primer sequence of sufficient size and sequence complexity to form a stable duplex on both sides of the deletion junction being traversed. Mutations may be employed in a selected

10 polynucleotide sequence to improve, alter, decrease, modify, or otherwise change the properties of the polynucleotide itself, and/or alter the properties, activity, composition, stability, or primary sequence of the encoded polypeptide.

In certain embodiments of the present invention, the inventors contemplate the mutagenesis of the disclosed polynucleotide sequences to alter one or

15 more properties of the encoded polypeptide, such as the antigenicity of a polypeptide vaccine. The techniques of site-specific mutagenesis are well-known in the art, and are widely used to create variants of both polypeptides and polynucleotides. For example, site-specific mutagenesis is often used to alter a specific portion of a DNA molecule. In such embodiments, a primer comprising typically about 14 to about 25 nucleotides or so

20 in length is employed, with about 5 to about 10 residues on both sides of the junction of the sequence being altered.

As will be appreciated by those of skill in the art, site-specific mutagenesis techniques have often employed a phage vector that exists in both a single stranded and double stranded form. Typical vectors useful in site-directed mutagenesis

25 include vectors such as the M13 phage. These phage are readily commercially-available and their use is generally well-known to those skilled in the art. Double-stranded plasmids are also routinely employed in site directed mutagenesis that eliminates the step of transferring the gene of interest from a plasmid to a phage.

In general, site-directed mutagenesis in accordance herewith is

30 performed by first obtaining a single-stranded vector or melting apart of two strands of a double-stranded vector that includes within its sequence a DNA sequence that

encodes the desired peptide. An oligonucleotide primer bearing the desired mutated sequence is prepared, generally synthetically. This primer is then annealed with the single-stranded vector, and subjected to DNA polymerizing enzymes such as *E. coli* polymerase I Klenow fragment, in order to complete the synthesis of the mutation-bearing strand. Thus, a heteroduplex is formed wherein one strand encodes the original non-mutated sequence and the second strand bears the desired mutation. This heteroduplex vector is then used to transform appropriate cells, such as *E. coli* cells, and clones are selected which include recombinant vectors bearing the mutated sequence arrangement.

10 The preparation of sequence variants of the selected peptide-encoding DNA segments using site-directed mutagenesis provides a means of producing potentially useful species and is not meant to be limiting as there are other ways in which sequence variants of peptides and the DNA sequences encoding them may be obtained. For example, recombinant vectors encoding the desired peptide sequence
15 may be treated with mutagenic agents, such as hydroxylamine, to obtain sequence variants. Specific details regarding these methods and protocols are found in the teachings of Maloy *et al.*, 1994; Segal, 1976; Prokop and Bajpai, 1991; Kuby, 1994; and Maniatis *et al.*, 1982, each incorporated herein by reference, for that purpose.

As used herein, the term "oligonucleotide directed mutagenesis
20 procedure" refers to template-dependent processes and vector-mediated propagation which result in an increase in the concentration of a specific nucleic acid molecule relative to its initial concentration, or in an increase in the concentration of a detectable signal, such as amplification. As used herein, the term "oligonucleotide directed mutagenesis procedure" is intended to refer to a process that involves the
25 template-dependent extension of a primer molecule. The term template dependent process refers to nucleic acid synthesis of an RNA or a DNA molecule wherein the sequence of the newly synthesized strand of nucleic acid is dictated by the well-known rules of complementary base pairing (see, for example, Watson, 1987). Typically, vector mediated methodologies involve the introduction of the nucleic acid fragment
30 into a DNA or RNA vector, the clonal amplification of the vector, and the recovery of

the amplified nucleic acid fragment. Examples of such methodologies are provided by U. S. Patent No. 4,237,224, specifically incorporated herein by reference in its entirety.

POLYNUCLEOTIDE AMPLIFICATION TECHNIQUES

A number of template dependent processes are available to amplify the target sequences of interest present in a sample. One of the best known amplification methods is the polymerase chain reaction (PCR™) which is described in detail in U.S. Patent Nos. 4,683,195, 4,683,202 and 4,800,159, each of which is incorporated herein by reference in its entirety. Briefly, in PCR™, two primer sequences are prepared which are complementary to regions on opposite complementary strands of the target sequence. An excess of deoxynucleoside triphosphates is added to a reaction mixture along with a DNA polymerase (*e.g.*, *Taq* polymerase). If the target sequence is present in a sample, the primers will bind to the target and the polymerase will cause the primers to be extended along the target sequence by adding on nucleotides. By raising and lowering the temperature of the reaction mixture, the extended primers will dissociate from the target to form reaction products, excess primers will bind to the target and to the reaction product and the process is repeated. Preferably reverse transcription and PCR™ amplification procedure may be performed in order to quantify the amount of mRNA amplified. Polymerase chain reaction methodologies are well known in the art.

Another method for amplification is the ligase chain reaction (referred to as LCR), disclosed in Eur. Pat. Appl. Publ. No. 320,308 (specifically incorporated herein by reference in its entirety). In LCR, two complementary probe pairs are prepared, and in the presence of the target sequence, each pair will bind to opposite complementary strands of the target such that they abut. In the presence of a ligase, the two probe pairs will link to form a single unit. By temperature cycling, as in PCR™, bound ligated units dissociate from the target and then serve as "target sequences" for ligation of excess probe pairs. U.S. Patent No. 4,883,750, incorporated herein by reference in its entirety, describes an alternative method of amplification similar to LCR for binding probe pairs to a target sequence.

Qbeta Replicase, described in PCT Intl. Pat. Appl. Publ. No. PCT/US87/00880, incorporated herein by reference in its entirety, may also be used as still another amplification method in the present invention. In this method, a replicative sequence of RNA that has a region complementary to that of a target is added to a
5 sample in the presence of an RNA polymerase. The polymerase will copy the replicative sequence that can then be detected.

An isothermal amplification method, in which restriction endonucleases and ligases are used to achieve the amplification of target molecules that contain nucleotide 5'-[α -thio]triphosphates in one strand of a restriction site (Walker *et al.*,
10 1992, incorporated herein by reference in its entirety), may also be useful in the amplification of nucleic acids in the present invention.

Strand Displacement Amplification (SDA) is another method of carrying out isothermal amplification of nucleic acids which involves multiple rounds of strand displacement and synthesis, *i.e.* nick translation. A similar method, called Repair Chain
15 Reaction (RCR) is another method of amplification which may be useful in the present invention and is involves annealing several probes throughout a region targeted for amplification, followed by a repair reaction in which only two of the four bases are present. The other two bases can be added as biotinylated derivatives for easy detection. A similar approach is used in SDA.

Sequences can also be detected using a cyclic probe reaction (CPR). In
20 CPR, a probe having a 3' and 5' sequences of non-target DNA and an internal or "middle" sequence of the target protein specific RNA is hybridized to DNA which is present in a sample. Upon hybridization, the reaction is treated with RNaseH, and the products of the probe are identified as distinctive products by generating a signal that is
25 released after digestion. The original template is annealed to another cycling probe and the reaction is repeated. Thus, CPR involves amplifying a signal generated by hybridization of a probe to a target gene specific expressed nucleic acid.

Still other amplification methods described in Great Britain Pat. Appl. No. 2 202 328, and in PCT Intl. Pat. Appl. Publ. No. PCT/US89/01025, each of which
30 is incorporated herein by reference in its entirety, may be used in accordance with the present invention. In the former application, "modified" primers are used in a PCR-

like, template and enzyme dependent synthesis. The primers may be modified by labeling with a capture moiety (*e.g.*, biotin) and/or a detector moiety (*e.g.*, enzyme). In the latter application, an excess of labeled probes is added to a sample. In the presence of the target sequence, the probe binds and is cleaved catalytically. After cleavage, the
5 target sequence is released intact to be bound by excess probe. Cleavage of the labeled probe signals the presence of the target sequence.

Other nucleic acid amplification procedures include transcription-based amplification systems (TAS) (Kwoh *et al.*, 1989; PCT Intl. Pat. Appl. Publ. No. WO 88/10315, incorporated herein by reference in its entirety), including nucleic acid
10 sequence based amplification (NASBA) and 3SR. In NASBA, the nucleic acids can be prepared for amplification by standard phenol/chloroform extraction, heat denaturation of a sample, treatment with lysis buffer and minispin columns for isolation of DNA and RNA or guanidinium chloride extraction of RNA. These amplification techniques involve annealing a primer that has sequences specific to the target sequence.
15 Following polymerization, DNA/RNA hybrids are digested with RNase H while double stranded DNA molecules are heat-denatured again. In either case the single stranded DNA is made fully double stranded by addition of second target-specific primer, followed by polymerization. The double stranded DNA molecules are then multiply transcribed by a polymerase such as T7 or SP6. In an isothermal cyclic reaction, the
20 RNAs are reverse transcribed into DNA, and transcribed once again with a polymerase such as T7 or SP6. The resulting products, whether truncated or complete, indicate target-specific sequences.

Eur. Pat. Appl. Publ. No. 329,822, incorporated herein by reference in its entirety, disclose a nucleic acid amplification process involving cyclically synthesizing
25 single-stranded RNA ("ssRNA"), ssDNA, and double-stranded DNA (dsDNA), which may be used in accordance with the present invention. The ssRNA is a first template for a first primer oligonucleotide, which is elongated by reverse transcriptase (RNA-dependent DNA polymerase). The RNA is then removed from resulting DNA:RNA duplex by the action of ribonuclease H (RNase H, an RNase specific for
30 RNA in a duplex with either DNA or RNA). The resultant ssDNA is a second template for a second primer, which also includes the sequences of an RNA polymerase

promoter (exemplified by T7 RNA polymerase) 5' to its homology to its template. This primer is then extended by DNA polymerase (exemplified by the large "Klenow" fragment of *E. coli* DNA polymerase I), resulting as a double-stranded DNA ("dsDNA") molecule, having a sequence identical to that of the original RNA between
5 the primers and having additionally, at one end, a promoter sequence. This promoter sequence can be used by the appropriate RNA polymerase to make many RNA copies of the DNA. These copies can then re-enter the cycle leading to very swift amplification. With proper choice of enzymes, this amplification can be done isothermally without addition of enzymes at each cycle. Because of the cyclical nature
10 of this process, the starting sequence can be chosen to be in the form of either DNA or RNA.

PCT Intl. Pat. Appl. Publ. No. WO 89/06700, incorporated herein by reference in its entirety, disclose a nucleic acid sequence amplification scheme based on the hybridization of a promoter/primer sequence to a target single-stranded DNA
15 ("ssDNA") followed by transcription of many RNA copies of the sequence. This scheme is not cyclic; *i.e.* new templates are not produced from the resultant RNA transcripts. Other amplification methods include "RACE" (Frohman, 1990), and "one-sided PCR" (Ohara, 1989) which are well-known to those of skill in the art.

Methods based on ligation of two (or more) oligonucleotides in the
20 presence of nucleic acid having the sequence of the resulting "di-oligonucleotide", thereby amplifying the di-oligonucleotide (Wu and Dean, 1996, incorporated herein by reference in its entirety), may also be used in the amplification of DNA sequences of the present invention.

BIOLOGICAL FUNCTIONAL EQUIVALENTS

25 Modification and changes may be made in the structure of the polynucleotides and polypeptides of the present invention and still obtain a functional molecule that encodes a polypeptide with desirable characteristics. As mentioned above, it is often desirable to introduce one or more mutations into a specific polynucleotide sequence. In certain circumstances, the resulting encoded polypeptide

sequence is altered by this mutation, or in other cases, the sequence of the polypeptide is unchanged by one or more mutations in the encoding polynucleotide.

When it is desirable to alter the amino acid sequence of a polypeptide to create an equivalent, or even an improved, second-generation molecule, the amino acid
5 changes may be achieved by changing one or more of the codons of the encoding DNA sequence, according to Table 1.

For example, certain amino acids may be substituted for other amino acids in a protein structure without appreciable loss of interactive binding capacity with structures such as, for example, antigen-binding regions of antibodies or binding sites
10 on substrate molecules. Since it is the interactive capacity and nature of a protein that defines that protein's biological functional activity, certain amino acid sequence substitutions can be made in a protein sequence, and, of course, its underlying DNA coding sequence, and nevertheless obtain a protein with like properties. It is thus contemplated by the inventors that various changes may be made in the peptide
15 sequences of the disclosed compositions, or corresponding DNA sequences which encode said peptides without appreciable loss of their biological utility or activity.

TABLE 1

Amino Acids			Codons						
Alanine	Ala	A	GCA	GCC	GCG	GCU			
Cysteine	Cys	C	UGC	UGU					
Aspartic acid	Asp	D	GAC	GAU					
Glutamic acid	Glu	E	GAA	GAG					
Phenylalanine	Phe	F	UUC	UUU					
Glycine	Gly	G	GGA	GGC	GGG	GGU			
Histidine	His	H	CAC	CAU					
Isoleucine	Ile	I	AUA	AUC	AUU				
Lysine	Lys	K	AAA	AAG					
Leucine	Leu	L	UUA	UUG	CUA	CUC	CUG	CUU	
Methionine	Met	M	AUG						
Asparagine	Asn	N	AAC	AAU					
Proline	Pro	P	CCA	CCC	CCG	CCU			
Glutamine	Gln	Q	CAA	CAG					
Arginine	Arg	R	AGA	AGG	CGA	CGC	CGG	CGU	
Serine	Ser	S	AGC	AGU	UCA	UCC	UCG	UCU	
Threonine	Thr	T	ACA	ACC	ACG	ACU			
Valine	Val	V	GUA	GUC	GUG	GUU			
Tryptophan	Trp	W	UGG						
Tyrosine	Tyr	Y	UAC	UAU					

In making such changes, the hydropathic index of amino acids may be considered. The importance of the hydropathic amino acid index in conferring

5 interactive biologic function on a protein is generally understood in the art (Kyte and Doolittle, 1982, incorporated herein by reference). It is accepted that the relative hydropathic character of the amino acid contributes to the secondary structure of the resultant protein, which in turn defines the interaction of the protein with other molecules, for example, enzymes, substrates, receptors, DNA, antibodies, antigens, and

10 the like. Each amino acid has been assigned a hydropathic index on the basis of its hydrophobicity and charge characteristics (Kyte and Doolittle, 1982). These values are:

isoleucine (+4.5); valine (+4.2); leucine (+3.8); phenylalanine (+2.8); cysteine/cystine (+2.5); methionine (+1.9); alanine (+1.8); glycine (−0.4); threonine (−0.7); serine (−0.8); tryptophan (−0.9); tyrosine (−1.3); proline (−1.6); histidine (−3.2); glutamate (−3.5); glutamine (−3.5); aspartate (−3.5); asparagine (−3.5); lysine (−3.9); and arginine (−4.5).

It is known in the art that certain amino acids may be substituted by other amino acids having a similar hydropathic index or score and still result in a protein with similar biological activity, *i.e.* still obtain a biological functionally equivalent protein. In making such changes, the substitution of amino acids whose hydropathic indices are within ± 2 is preferred, those within ± 1 are particularly preferred, and those within ± 0.5 are even more particularly preferred. It is also understood in the art that the substitution of like amino acids can be made effectively on the basis of hydrophilicity. U. S. Patent 4,554,101 (specifically incorporated herein by reference in its entirety), states that the greatest local average hydrophilicity of a protein, as governed by the hydrophilicity of its adjacent amino acids, correlates with a biological property of the protein.

As detailed in U. S. Patent 4,554,101, the following hydrophilicity values have been assigned to amino acid residues: arginine (+3.0); lysine (+3.0); aspartate (+3.0 \pm 1); glutamate (+3.0 \pm 1); serine (+0.3); asparagine (+0.2); glutamine (+0.2); glycine (0); threonine (−0.4); proline (−0.5 \pm 1); alanine (−0.5); histidine (−0.5); cysteine (−1.0); methionine (−1.3); valine (−1.5); leucine (−1.8); isoleucine (−1.8); tyrosine (−2.3); phenylalanine (−2.5); tryptophan (−3.4). It is understood that an amino acid can be substituted for another having a similar hydrophilicity value and still obtain a biologically equivalent, and in particular, an immunologically equivalent protein. In such changes, the substitution of amino acids whose hydrophilicity values are within ± 2 is preferred, those within ± 1 are particularly preferred, and those within ± 0.5 are even more particularly preferred.

As outlined above, amino acid substitutions are generally therefore based on the relative similarity of the amino acid side-chain substituents, for example, their hydrophobicity, hydrophilicity, charge, size, and the like. Exemplary substitutions that take various of the foregoing characteristics into consideration are well known to those

of skill in the art and include: arginine and lysine; glutamate and aspartate; serine and threonine; glutamine and asparagine; and valine, leucine and isoleucine.

In addition, any polynucleotide may be further modified to increase stability *in vivo*. Possible modifications include, but are not limited to, the addition of
5 flanking sequences at the 5' and/or 3' ends; the use of phosphorothioate or 2' O-methyl rather than phosphodiesterase linkages in the backbone; and/or the inclusion of nontraditional bases such as inosine, queosine and wybutosine, as well as acetyl-methyl-, thio- and other modified forms of adenine, cytidine, guanine, thymine and uridine.

10 IN VIVO POLYNUCLEOTIDE DELIVERY TECHNIQUES

In additional embodiments, genetic constructs comprising one or more of the polynucleotides of the invention are introduced into cells *in vivo*. This may be achieved using any of a variety of well known approaches, several of which are outlined below for the purpose of illustration.

15 1. ADENOVIRUS

One of the preferred methods for *in vivo* delivery of one or more nucleic acid sequences involves the use of an adenovirus expression vector. "Adenovirus expression vector" is meant to include those constructs containing adenovirus sequences sufficient to (a) support packaging of the construct and (b) to express a
20 polynucleotide that has been cloned therein in a sense or antisense orientation. Of course, in the context of an antisense construct, expression does not require that the gene product be synthesized.

The expression vector comprises a genetically engineered form of an adenovirus. Knowledge of the genetic organization of adenovirus, a 36 kb, linear,
25 double-stranded DNA virus, allows substitution of large pieces of adenoviral DNA with foreign sequences up to 7 kb (Grunhaus and Horwitz, 1992). In contrast to retrovirus, the adenoviral infection of host cells does not result in chromosomal integration because adenoviral DNA can replicate in an episomal manner without potential genotoxicity. Also, adenoviruses are structurally stable, and no genome rearrangement

has been detected after extensive amplification. Adenovirus can infect virtually all epithelial cells regardless of their cell cycle stage. So far, adenoviral infection appears to be linked only to mild disease such as acute respiratory disease in humans.

Adenovirus is particularly suitable for use as a gene transfer vector because of its mid-sized genome, ease of manipulation, high titer, wide target-cell range and high infectivity. Both ends of the viral genome contain 100-200 base pair inverted repeats (ITRs), which are *cis* elements necessary for viral DNA replication and packaging. The early (E) and late (L) regions of the genome contain different transcription units that are divided by the onset of viral DNA replication. The E1 region (E1A and E1B) encodes proteins responsible for the regulation of transcription of the viral genome and a few cellular genes. The expression of the E2 region (E2A and E2B) results in the synthesis of the proteins for viral DNA replication. These proteins are involved in DNA replication, late gene expression and host cell shut-off (Renan, 1990). The products of the late genes, including the majority of the viral capsid proteins, are expressed only after significant processing of a single primary transcript issued by the major late promoter (MLP). The MLP, (located at 16.8 m.u.) is particularly efficient during the late phase of infection, and all the mRNA's issued from this promoter possess a 5'-tripartite leader (TPL) sequence which makes them preferred mRNA's for translation.

In a current system, recombinant adenovirus is generated from homologous recombination between shuttle vector and provirus vector. Due to the possible recombination between two proviral vectors, wild-type adenovirus may be generated from this process. Therefore, it is critical to isolate a single clone of virus from an individual plaque and examine its genomic structure.

Generation and propagation of the current adenovirus vectors, which are replication deficient, depend on a unique helper cell line, designated 293, which was transformed from human embryonic kidney cells by Ad5 DNA fragments and constitutively expresses E1 proteins (Graham *et al.*, 1977). Since the E3 region is dispensable from the adenovirus genome (Jones and Shenk, 1978), the current adenovirus vectors, with the help of 293 cells, carry foreign DNA in either the E1, the D3 or both regions (Graham and Prevec, 1991). In nature, adenovirus can package

approximately 105% of the wild-type genome (Ghosh-Choudhury *et al.*, 1987), providing capacity for about 2 extra kB of DNA. Combined with the approximately 5.5 kB of DNA that is replaceable in the E1 and E3 regions, the maximum capacity of the current adenovirus vector is under 7.5 kB, or about 15% of the total length of the vector. More than 80% of the adenovirus viral genome remains in the vector backbone and is the source of vector-borne cytotoxicity. Also, the replication deficiency of the E1-deleted virus is incomplete. For example, leakage of viral gene expression has been observed with the currently available vectors at high multiplicities of infection (MOI) (Mulligan, 1993).

Helper cell lines may be derived from human cells such as human embryonic kidney cells, muscle cells, hematopoietic cells or other human embryonic mesenchymal or epithelial cells. Alternatively, the helper cells may be derived from the cells of other mammalian species that are permissive for human adenovirus. Such cells include, *e.g.*, Vero cells or other monkey embryonic mesenchymal or epithelial cells. As stated above, the currently preferred helper cell line is 293.

Recently, Racher *et al.* (1995) disclosed improved methods for culturing 293 cells and propagating adenovirus. In one format, natural cell aggregates are grown by inoculating individual cells into 1 liter siliconized spinner flasks (Technique, Cambridge, UK) containing 100-200 ml of medium. Following stirring at 40 rpm, the cell viability is estimated with trypan blue. In another format, Fibra-Cel microcarriers (Bibby Sterlin, Stone, UK) (5 g/l) is employed as follows. A cell inoculum, resuspended in 5 ml of medium, is added to the carrier (50 ml) in a 250 ml Erlenmeyer flask and left stationary, with occasional agitation, for 1 to 4 h. The medium is then replaced with 50 ml of fresh medium and shaking initiated. For virus production, cells are allowed to grow to about 80% confluence, after which time the medium is replaced (to 25% of the final volume) and adenovirus added at an MOI of 0.05. Cultures are left stationary overnight, following which the volume is increased to 100% and shaking commenced for another 72 h.

Other than the requirement that the adenovirus vector be replication defective, or at least conditionally defective, the nature of the adenovirus vector is not believed to be crucial to the successful practice of the invention. The adenovirus may

be of any of the 42 different known serotypes or subgroups A-F. Adenovirus type 5 of subgroup C is the preferred starting material in order to obtain a conditional replication-defective adenovirus vector for use in the present invention, since Adenovirus type 5 is a human adenovirus about which a great deal of biochemical and genetic information is known, and it has historically been used for most constructions employing adenovirus as a vector.

As stated above, the typical vector according to the present invention is replication defective and will not have an adenovirus E1 region. Thus, it will be most convenient to introduce the polynucleotide encoding the gene of interest at the position from which the E1-coding sequences have been removed. However, the position of insertion of the construct within the adenovirus sequences is not critical to the invention. The polynucleotide encoding the gene of interest may also be inserted in lieu of the deleted E3 region in E3 replacement vectors as described by Karlsson *et al.* (1986) or in the E4 region where a helper cell line or helper virus complements the E4 defect.

Adenovirus is easy to grow and manipulate and exhibits broad host range *in vitro* and *in vivo*. This group of viruses can be obtained in high titers, *e.g.*, 10^9 - 10^{11} plaque-forming units per ml, and they are highly infective. The life cycle of adenovirus does not require integration into the host cell genome. The foreign genes delivered by adenovirus vectors are episomal and, therefore, have low genotoxicity to host cells. No side effects have been reported in studies of vaccination with wild-type adenovirus (Couch *et al.*, 1963; Top *et al.*, 1971), demonstrating their safety and therapeutic potential as *in vivo* gene transfer vectors.

Adenovirus vectors have been used in eukaryotic gene expression (Levrero *et al.*, 1991; Gomez-Foix *et al.*, 1992) and vaccine development (Grunhaus and Horwitz, 1992; Graham and Prevec, 1992). Recently, animal studies suggested that recombinant adenovirus could be used for gene therapy (Stratford-Perricaudet and Perricaudet, 1991; Stratford-Perricaudet *et al.*, 1990; Rich *et al.*, 1993). Studies in administering recombinant adenovirus to different tissues include trachea instillation (Rosenfeld *et al.*, 1991; Rosenfeld *et al.*, 1992), muscle injection (Ragot *et al.*, 1993),

peripheral intravenous injections (Herz and Gerard, 1993) and stereotactic inoculation into the brain (Le Gal La Salle *et al.*, 1993).

2. RETROVIRUSES

The retroviruses are a group of single-stranded RNA viruses characterized by an ability to convert their RNA to double-stranded DNA in infected cells by a process of reverse-transcription (Coffin, 1990). The resulting DNA then stably integrates into cellular chromosomes as a provirus and directs synthesis of viral proteins. The integration results in the retention of the viral gene sequences in the recipient cell and its descendants. The retroviral genome contains three genes, gag, pol, and env that code for capsid proteins, polymerase enzyme, and envelope components, respectively. A sequence found upstream from the gag gene contains a signal for packaging of the genome into virions. Two long terminal repeat (LTR) sequences are present at the 5' and 3' ends of the viral genome. These contain strong promoter and enhancer sequences and are also required for integration in the host cell genome (Coffin, 1990).

In order to construct a retroviral vector, a nucleic acid encoding one or more oligonucleotide or polynucleotide sequences of interest is inserted into the viral genome in the place of certain viral sequences to produce a virus that is replication-defective. In order to produce virions, a packaging cell line containing the gag, pol, and env genes but without the LTR and packaging components is constructed (Mann *et al.*, 1983). When a recombinant plasmid containing a cDNA, together with the retroviral LTR and packaging sequences is introduced into this cell line (by calcium phosphate precipitation for example), the packaging sequence allows the RNA transcript of the recombinant plasmid to be packaged into viral particles, which are then secreted into the culture media (Nicolas and Rubenstein, 1988; Temin, 1986; Mann *et al.*, 1983). The media containing the recombinant retroviruses is then collected, optionally concentrated, and used for gene transfer. Retroviral vectors are able to infect a broad variety of cell types. However, integration and stable expression require the division of host cells (Paskind *et al.*, 1975).

A novel approach designed to allow specific targeting of retrovirus vectors was recently developed based on the chemical modification of a retrovirus by the chemical addition of lactose residues to the viral envelope. This modification could permit the specific infection of hepatocytes *via* sialoglycoprotein receptors.

5 A different approach to targeting of recombinant retroviruses was designed in which biotinylated antibodies against a retroviral envelope protein and against a specific cell receptor were used. The antibodies were coupled *via* the biotin components by using streptavidin (Roux *et al.*, 1989). Using antibodies against major histocompatibility complex class I and class II antigens, they demonstrated the infection
10 of a variety of human cells that bore those surface antigens with an ecotropic virus *in vitro* (Roux *et al.*, 1989).

3. ADENO-ASSOCIATED VIRUSES

AAV (Ridgeway, 1988; Hermonat and Muzyczka, 1984) is a parovirus, discovered as a contamination of adenoviral stocks. It is a ubiquitous virus (antibodies
15 are present in 85% of the US human population) that has not been linked to any disease. It is also classified as a dependovirus, because its replications is dependent on the presence of a helper virus, such as adenovirus. Five serotypes have been isolated, of which AAV-2 is the best characterized. AAV has a single-stranded linear DNA that is encapsidated into capsid proteins VP1, VP2 and VP3 to form an icosahedral virion of
20 20 to 24 nm in diameter (Muzyczka and McLaughlin, 1988).

The AAV DNA is approximately 4.7 kilobases long. It contains two open reading frames and is flanked by two ITRs. There are two major genes in the AAV genome: *rep* and *cap*. The *rep* gene codes for proteins responsible for viral replications, whereas *cap* codes for capsid protein VP1-3. Each ITR forms a T-shaped
25 hairpin structure. These terminal repeats are the only essential *cis* components of the AAV for chromosomal integration. Therefore, the AAV can be used as a vector with all viral coding sequences removed and replaced by the cassette of genes for delivery. Three viral promoters have been identified and named p5, p19, and p40, according to their map position. Transcription from p5 and p19 results in production of rep proteins,

and transcription from p40 produces the capsid proteins (Hermonat and Muzyczka, 1984).

There are several factors that prompted researchers to study the possibility of using rAAV as an expression vector. One is that the requirements for delivering a gene to integrate into the host chromosome are surprisingly few. It is necessary to have the 145-bp ITRs, which are only 6% of the AAV genome. This leaves room in the vector to assemble a 4.5-kb DNA insertion. While this carrying capacity may prevent the AAV from delivering large genes, it is amply suited for delivering the antisense constructs of the present invention.

AAV is also a good choice of delivery vehicles due to its safety. There is a relatively complicated rescue mechanism: not only wild type adenovirus but also AAV genes are required to mobilize rAAV. Likewise, AAV is not pathogenic and not associated with any disease. The removal of viral coding sequences minimizes immune reactions to viral gene expression, and therefore, rAAV does not evoke an inflammatory response.

4. OTHER VIRAL VECTORS AS EXPRESSION CONSTRUCTS

Other viral vectors may be employed as expression constructs in the present invention for the delivery of oligonucleotide or polynucleotide sequences to a host cell. Vectors derived from viruses such as vaccinia virus (Ridgeway, 1988; Coupar *et al.*, 1988), lentiviruses, polio viruses and herpes viruses may be employed. They offer several attractive features for various mammalian cells (Friedmann, 1989; Ridgeway, 1988; Coupar *et al.*, 1988; Horwich *et al.*, 1990).

With the recent recognition of defective hepatitis B viruses, new insight was gained into the structure-function relationship of different viral sequences. *In vitro* studies showed that the virus could retain the ability for helper-dependent packaging and reverse transcription despite the deletion of up to 80% of its genome (Horwich *et al.*, 1990). This suggested that large portions of the genome could be replaced with foreign genetic material. The hepatotropism and persistence (integration) were particularly attractive properties for liver-directed gene transfer. Chang *et al.* (1991) introduced the chloramphenicol acetyltransferase (CAT) gene into duck hepatitis B

virus genome in the place of the polymerase, surface, and pre-surface coding sequences. It was cotransfected with wild-type virus into an avian hepatoma cell line. Culture media containing high titers of the recombinant virus were used to infect primary duckling hepatocytes. Stable CAT gene expression was detected for at least 24 days after transfection (Chang *et al.*, 1991).

5. NON-VIRAL VECTORS

In order to effect expression of the oligonucleotide or polynucleotide sequences of the present invention, the expression construct must be delivered into a cell. This delivery may be accomplished *in vitro*, as in laboratory procedures for transforming cells lines, or *in vivo* or *ex vivo*, as in the treatment of certain disease states. As described above, one preferred mechanism for delivery is *via* viral infection where the expression construct is encapsulated in an infectious viral particle.

Once the expression construct has been delivered into the cell the nucleic acid encoding the desired oligonucleotide or polynucleotide sequences may be positioned and expressed at different sites. In certain embodiments, the nucleic acid encoding the construct may be stably integrated into the genome of the cell. This integration may be in the specific location and orientation *via* homologous recombination (gene replacement) or it may be integrated in a random, non-specific location (gene augmentation). In yet further embodiments, the nucleic acid may be stably maintained in the cell as a separate, episomal segment of DNA. Such nucleic acid segments or "episomes" encode sequences sufficient to permit maintenance and replication independent of or in synchronization with the host cell cycle. How the expression construct is delivered to a cell and where in the cell the nucleic acid remains is dependent on the type of expression construct employed.

In certain embodiments of the invention, the expression construct comprising one or more oligonucleotide or polynucleotide sequences may simply consist of naked recombinant DNA or plasmids. Transfer of the construct may be performed by any of the methods mentioned above which physically or chemically permeabilize the cell membrane. This is particularly applicable for transfer *in vitro* but it may be applied to *in vivo* use as well. Dubensky *et al.* (1984) successfully injected

- polyomavirus DNA in the form of calcium phosphate precipitates into liver and spleen of adult and newborn mice demonstrating active viral replication and acute infection. Benvenisty and Reshef (1986) also demonstrated that direct intraperitoneal injection of calcium phosphate-precipitated plasmids results in expression of the transfected genes.
- 5 It is envisioned that DNA encoding a gene of interest may also be transferred in a similar manner *in vivo* and express the gene product.

Another embodiment of the invention for transferring a naked DNA expression construct into cells may involve particle bombardment. This method depends on the ability to accelerate DNA-coated microprojectiles to a high velocity
10 allowing them to pierce cell membranes and enter cells without killing them (Klein *et al.*, 1987). Several devices for accelerating small particles have been developed. One such device relies on a high voltage discharge to generate an electrical current, which in turn provides the motive force (Yang *et al.*, 1990). The microprojectiles used have consisted of biologically inert substances such as tungsten or gold beads.

- 15 Selected organs including the liver, skin, and muscle tissue of rats and mice have been bombarded *in vivo* (Yang *et al.*, 1990; Zelenin *et al.*, 1991). This may require surgical exposure of the tissue or cells, to eliminate any intervening tissue between the gun and the target organ, *i.e.* *ex vivo* treatment. Again, DNA encoding a particular gene may be delivered *via* this method and still be incorporated by the present
20 invention.

ANTISENSE OLIGONUCLEOTIDES

- The end result of the flow of genetic information is the synthesis of protein. DNA is transcribed by polymerases into messenger RNA and translated on the ribosome to yield a folded, functional protein. Thus there are several steps along the
25 route where protein synthesis can be inhibited. The native DNA segment coding for a polypeptide described herein, as all such mammalian DNA strands, has two strands: a sense strand and an antisense strand held together by hydrogen bonding. The messenger RNA coding for polypeptide has the same nucleotide sequence as the sense DNA strand except that the DNA thymidine is replaced by uridine. Thus, synthetic

antisense nucleotide sequences will bind to a mRNA and inhibit expression of the protein encoded by that mRNA.

The targeting of antisense oligonucleotides to mRNA is thus one mechanism to shut down protein synthesis, and, consequently, represents a powerful and targeted therapeutic approach. For example, the synthesis of polygalacturonase and the muscarine type 2 acetylcholine receptor are inhibited by antisense oligonucleotides directed to their respective mRNA sequences (U. S. Patent 5,739,119 and U. S. Patent 5,759,829, each specifically incorporated herein by reference in its entirety). Further, examples of antisense inhibition have been demonstrated with the nuclear protein cyclin, the multiple drug resistance gene (MDG1), ICAM-1, E-selectin, STK-1, striatal GABA_A receptor and human EGF (Jaskulski *et al.*, 1988; Vasanthakumar and Ahmed, 1989; Peris *et al.*, 1998; U. S. Patent 5,801,154; U. S. Patent 5,789,573; U. S. Patent 5,718,709 and U. S. Patent 5,610,288, each specifically incorporated herein by reference in its entirety). Antisense constructs have also been described that inhibit and can be used to treat a variety of abnormal cellular proliferations, *e.g.* cancer (U. S. Patent 5,747,470; U. S. Patent 5,591,317 and U. S. Patent 5,783,683, each specifically incorporated herein by reference in its entirety).

Therefore, in exemplary embodiments, the invention provides oligonucleotide sequences that comprise all, or a portion of, any sequence that is capable of specifically binding to polynucleotide sequence described herein, or a complement thereof. In one embodiment, the antisense oligonucleotides comprise DNA or derivatives thereof. In another embodiment, the oligonucleotides comprise RNA or derivatives thereof. In a third embodiment, the oligonucleotides are modified DNAs comprising a phosphorothioated modified backbone. In a fourth embodiment, the oligonucleotide sequences comprise peptide nucleic acids or derivatives thereof. In each case, preferred compositions comprise a sequence region that is complementary, and more preferably substantially-complementary, and even more preferably, completely complementary to one or more portions of polynucleotides disclosed herein.

Selection of antisense compositions specific for a given gene sequence is based upon analysis of the chosen target sequence (*i.e.* in these illustrative examples the rat and human sequences) and determination of secondary structure, T_m , binding

energy, relative stability, and antisense compositions were selected based upon their relative inability to form dimers, hairpins, or other secondary structures that would reduce or prohibit specific binding to the target mRNA in a host cell.

Highly preferred target regions of the mRNA, are those which are at or
5 near the AUG translation initiation codon, and those sequences which were substantially complementary to 5' regions of the mRNA. These secondary structure analyses and target site selection considerations were performed using v.4 of the OLIGO primer analysis software (Rychlik, 1997) and the BLASTN 2.0.5 algorithm software (Altschul *et al.*, 1997).

10 The use of an antisense delivery method employing a short peptide vector, termed MPG (27 residues), is also contemplated. The MPG peptide contains a hydrophobic domain derived from the fusion sequence of HIV gp41 and a hydrophilic domain from the nuclear localization sequence of SV40 T-antigen (Morris *et al.*, 1997). It has been demonstrated that several molecules of the MPG peptide coat the antisense
15 oligonucleotides and can be delivered into cultured mammalian cells in less than 1 hour with relatively high efficiency (90%). Further, the interaction with MPG strongly increases both the stability of the oligonucleotide to nuclease and the ability to cross the plasma membrane (Morris *et al.*, 1997).

RIBOZYMES

20 Although proteins traditionally have been used for catalysis of nucleic acids, another class of macromolecules has emerged as useful in this endeavor. Ribozymes are RNA-protein complexes that cleave nucleic acids in a site-specific fashion. Ribozymes have specific catalytic domains that possess endonuclease activity (Kim and Cech, 1987; Gerlach *et al.*, 1987; Forster and Symons, 1987). For example, a
25 large number of ribozymes accelerate phosphoester transfer reactions with a high degree of specificity, often cleaving only one of several phosphoesters in an oligonucleotide substrate (Cech *et al.*, 1981; Michel and Westhof, 1990; Reinhold-Hurek and Shub, 1992). This specificity has been attributed to the requirement that the substrate bind via specific base-pairing interactions to the internal guide sequence
30 ("IGS") of the ribozyme prior to chemical reaction.

Ribozyme catalysis has primarily been observed as part of sequence-specific cleavage/ligation reactions involving nucleic acids (Joyce, 1989; Cech *et al.*, 1981). For example, U. S. Patent No. 5,354,855 (specifically incorporated herein by reference) reports that certain ribozymes can act as endonucleases with a sequence
5 specificity greater than that of known ribonucleases and approaching that of the DNA restriction enzymes. Thus, sequence-specific ribozyme-mediated inhibition of gene expression may be particularly suited to therapeutic applications (Scanlon *et al.*, 1991; Sarver *et al.*, 1990). Recently, it was reported that ribozymes elicited genetic changes in some cells lines to which they were applied; the altered genes included the oncogenes
10 H-*ras*, c-*fos* and genes of HIV. Most of this work involved the modification of a target mRNA, based on a specific mutant codon that is cleaved by a specific ribozyme.

Six basic varieties of naturally-occurring enzymatic RNAs are known presently. Each can catalyze the hydrolysis of RNA phosphodiester bonds *in trans* (and thus can cleave other RNA molecules) under physiological conditions. In general,
15 enzymatic nucleic acids act by first binding to a target RNA. Such binding occurs through the target binding portion of a enzymatic nucleic acid which is held in close proximity to an enzymatic portion of the molecule that acts to cleave the target RNA. Thus, the enzymatic nucleic acid first recognizes and then binds a target RNA through complementary base-pairing, and once bound to the correct site, acts enzymatically to
20 cut the target RNA. Strategic cleavage of such a target RNA will destroy its ability to direct synthesis of an encoded protein. After an enzymatic nucleic acid has bound and cleaved its RNA target, it is released from that RNA to search for another target and can repeatedly bind and cleave new targets.

The enzymatic nature of a ribozyme is advantageous over many
25 technologies, such as antisense technology (where a nucleic acid molecule simply binds to a nucleic acid target to block its translation) since the concentration of ribozyme necessary to affect a therapeutic treatment is lower than that of an antisense oligonucleotide. This advantage reflects the ability of the ribozyme to act enzymatically. Thus, a single ribozyme molecule is able to cleave many molecules of
30 target RNA. In addition, the ribozyme is a highly specific inhibitor, with the specificity of inhibition depending not only on the base pairing mechanism of binding to the target

RNA, but also on the mechanism of target RNA cleavage. Single mismatches, or base-substitutions, near the site of cleavage can completely eliminate catalytic activity of a ribozyme. Similar mismatches in antisense molecules do not prevent their action (Woolf *et al.*, 1992). Thus, the specificity of action of a ribozyme is greater than that of
5 an antisense oligonucleotide binding the same RNA site.

The enzymatic nucleic acid molecule may be formed in a hammerhead, hairpin, a hepatitis δ virus, group I intron or RNaseP RNA (in association with an RNA guide sequence) or Neurospora VS RNA motif. Examples of hammerhead motifs are described by Rossi *et al.* (1992). Examples of hairpin motifs are described by Hampel
10 *et al.* (Eur. Pat. Appl. Publ. No. EP 0360257), Hampel and Tritz (1989), Hampel *et al.* (1990) and U. S. Patent 5,631,359 (specifically incorporated herein by reference). An example of the hepatitis δ virus motif is described by Perrotta and Been (1992); an example of the RNaseP motif is described by Guerrier-Takada *et al.* (1983); Neurospora VS RNA ribozyme motif is described by Collins (Saville and Collins,
15 1990; Saville and Collins, 1991; Collins and Olive, 1993); and an example of the Group I intron is described in (U. S. Patent 4,987,071, specifically incorporated herein by reference). All that is important in an enzymatic nucleic acid molecule of this invention is that it has a specific substrate binding site which is complementary to one or more of the target gene RNA regions, and that it have nucleotide sequences within or
20 surrounding that substrate binding site which impart an RNA cleaving activity to the molecule. Thus the ribozyme constructs need not be limited to specific motifs mentioned herein.

In certain embodiments, it may be important to produce enzymatic cleaving agents which exhibit a high degree of specificity for the RNA of a desired
25 target, such as one of the sequences disclosed herein. The enzymatic nucleic acid molecule is preferably targeted to a highly conserved sequence region of a target mRNA. Such enzymatic nucleic acid molecules can be delivered exogenously to specific cells as required. Alternatively, the ribozymes can be expressed from DNA or RNA vectors that are delivered to specific cells.

30 Small enzymatic nucleic acid motifs (*e.g.*, of the hammerhead or the hairpin structure) may also be used for exogenous delivery. The simple structure of

these molecules increases the ability of the enzymatic nucleic acid to invade targeted regions of the mRNA structure. Alternatively, catalytic RNA molecules can be expressed within cells from eukaryotic promoters (*e.g.*, Scanlon *et al.*, 1991; Kashani-Sabet *et al.*, 1992; Dropulic *et al.*, 1992; Weerasinghe *et al.*, 1991; Ojwang *et al.*, 1992; 5 Chen *et al.*, 1992; Sarver *et al.*, 1990). Those skilled in the art realize that any ribozyme can be expressed in eukaryotic cells from the appropriate DNA vector. The activity of such ribozymes can be augmented by their release from the primary transcript by a second ribozyme (Int. Pat. Appl. Publ. No. WO 93/23569, and Int. Pat. Appl. Publ. No. WO 94/02595, both hereby incorporated by reference; Ohkawa *et al.*, 10 1992; Taira *et al.*, 1991; and Ventura *et al.*, 1993).

Ribozymes may be added directly, or can be complexed with cationic lipids, lipid complexes, packaged within liposomes, or otherwise delivered to target cells. The RNA or RNA complexes can be locally administered to relevant tissues *ex vivo*, or *in vivo* through injection, aerosol inhalation, infusion pump or stent, with or 15 without their incorporation in biopolymers.

Ribozymes may be designed as described in Int. Pat. Appl. Publ. No. WO 93/23569 and Int. Pat. Appl. Publ. No. WO 94/02595, each specifically incorporated herein by reference) and synthesized to be tested *in vitro* and *in vivo*, as described. Such ribozymes can also be optimized for delivery. While specific 20 examples are provided, those in the art will recognize that equivalent RNA targets in other species can be utilized when necessary.

Hammerhead or hairpin ribozymes may be individually analyzed by computer folding (Jaeger *et al.*, 1989) to assess whether the ribozyme sequences fold into the appropriate secondary structure. Those ribozymes with unfavorable 25 intramolecular interactions between the binding arms and the catalytic core are eliminated from consideration. Varying binding arm lengths can be chosen to optimize activity. Generally, at least 5 or so bases on each arm are able to bind to, or otherwise interact with, the target RNA.

Ribozymes of the hammerhead or hairpin motif may be designed to 30 anneal to various sites in the mRNA message, and can be chemically synthesized. The method of synthesis used follows the procedure for normal RNA synthesis as described

in Usman *et al.* (1987) and in Scaringe *et al.* (1990) and makes use of common nucleic acid protecting and coupling groups, such as dimethoxytrityl at the 5'-end, and phosphoramidites at the 3'-end. Average stepwise coupling yields are typically >98%. Hairpin ribozymes may be synthesized in two parts and annealed to reconstruct an
5 active ribozyme (Chowrira and Burke, 1992). Ribozymes may be modified extensively to enhance stability by modification with nuclease resistant groups, for example, 2'-amino, 2'-C-allyl, 2'-fluoro, 2'-O-methyl, 2'-H (for a review see *e.g.*, Usman and Cedergren, 1992). Ribozymes may be purified by gel electrophoresis using general methods or by high pressure liquid chromatography and resuspended in water.

10 Ribozyme activity can be optimized by altering the length of the ribozyme binding arms, or chemically synthesizing ribozymes with modifications that prevent their degradation by serum ribonucleases (see *e.g.*, Int. Pat. Appl. Publ. No. WO 92/07065; Perrault *et al.*, 1990; Pieken *et al.*, 1991; Usman and Cedergren, 1992; Int. Pat. Appl. Publ. No. WO 93/15187; Int. Pat. Appl. Publ. No. WO 91/03162; Eur.
15 Pat. Appl. Publ. No. 92110298.4; U. S. Patent 5,334,711; and Int. Pat. Appl. Publ. No. WO 94/13688, which describe various chemical modifications that can be made to the sugar moieties of enzymatic RNA molecules), modifications which enhance their efficacy in cells, and removal of stem II bases to shorten RNA synthesis times and reduce chemical requirements.

20 Sullivan *et al.* (Int. Pat. Appl. Publ. No. WO 94/02595) describes the general methods for delivery of enzymatic RNA molecules. Ribozymes may be administered to cells by a variety of methods known to those familiar to the art, including, but not restricted to, encapsulation in liposomes, by iontophoresis, or by incorporation into other vehicles, such as hydrogels, cyclodextrins, biodegradable
25 nanocapsules, and bioadhesive microspheres. For some indications, ribozymes may be directly delivered *ex vivo* to cells or tissues with or without the aforementioned vehicles. Alternatively, the RNA/vehicle combination may be locally delivered by direct inhalation, by direct injection or by use of a catheter, infusion pump or stent. Other routes of delivery include, but are not limited to, intravascular, intramuscular,
30 subcutaneous or joint injection, aerosol inhalation, oral (tablet or pill form), topical, systemic, ocular, intraperitoneal and/or intrathecal delivery. More detailed descriptions

of ribozyme delivery and administration are provided in Int. Pat. Appl. Publ. No. WO 94/02595 and Int. Pat. Appl. Publ. No. WO 93/23569, each specifically incorporated herein by reference.

Another means of accumulating high concentrations of a ribozyme(s) within cells is to incorporate the ribozyme-encoding sequences into a DNA expression vector. Transcription of the ribozyme sequences are driven from a promoter for eukaryotic RNA polymerase I (pol I), RNA polymerase II (pol II), or RNA polymerase III (pol III). Transcripts from pol II or pol III promoters will be expressed at high levels in all cells; the levels of a given pol II promoter in a given cell type will depend on the nature of the gene regulatory sequences (enhancers, silencers, *etc.*) present nearby. Prokaryotic RNA polymerase promoters may also be used, providing that the prokaryotic RNA polymerase enzyme is expressed in the appropriate cells (Elroy-Stein and Moss, 1990; Gao and Huang, 1993; Lieber *et al.*, 1993; Zhou *et al.*, 1990). Ribozymes expressed from such promoters can function in mammalian cells (*e.g.* Kashani-Saber *et al.*, 1992; Ojwang *et al.*, 1992; Chen *et al.*, 1992; Yu *et al.*, 1993; L'Huillier *et al.*, 1992; Lisiewicz *et al.*, 1993). Such transcription units can be incorporated into a variety of vectors for introduction into mammalian cells, including but not restricted to, plasmid DNA vectors, viral DNA vectors (such as adenovirus or adeno-associated vectors), or viral RNA vectors (such as retroviral, semliki forest virus, sindbis virus vectors).

Ribozymes may be used as diagnostic tools to examine genetic drift and mutations within diseased cells. They can also be used to assess levels of the target RNA molecule. The close relationship between ribozyme activity and the structure of the target RNA allows the detection of mutations in any region of the molecule which alters the base-pairing and three-dimensional structure of the target RNA. By using multiple ribozymes, one may map nucleotide changes which are important to RNA structure and function *in vitro*, as well as in cells and tissues. Cleavage of target RNAs with ribozymes may be used to inhibit gene expression and define the role (essentially) of specified gene products in the progression of disease. In this manner, other genetic targets may be defined as important mediators of the disease. These studies will lead to better treatment of the disease progression by affording the possibility of combinational

therapies (*e.g.*, multiple ribozymes targeted to different genes, ribozymes coupled with known small molecule inhibitors, or intermittent treatment with combinations of ribozymes and/or other chemical or biological molecules). Other *in vitro* uses of ribozymes are well known in the art, and include detection of the presence of mRNA associated with an IL-5 related condition. Such RNA is detected by determining the presence of a cleavage product after treatment with a ribozyme using standard methodology.

PEPTIDE NUCLEIC ACIDS

In certain embodiments, the inventors contemplate the use of peptide nucleic acids (PNAs) in the practice of the methods of the invention. PNA is a DNA mimic in which the nucleobases are attached to a pseudopeptide backbone (Good and Nielsen, 1997). PNA is able to be utilized in a number methods that traditionally have used RNA or DNA. Often PNA sequences perform better in techniques than the corresponding RNA or DNA sequences and have utilities that are not inherent to RNA or DNA. A review of PNA including methods of making, characteristics of, and methods of using, is provided by Corey (1997) and is incorporated herein by reference. As such, in certain embodiments, one may prepare PNA sequences that are complementary to one or more portions of the ACE mRNA sequence, and such PNA compositions may be used to regulate, alter, decrease, or reduce the translation of ACE-specific mRNA, and thereby alter the level of ACE activity in a host cell to which such PNA compositions have been administered.

PNAs have 2-aminoethyl-glycine linkages replacing the normal phosphodiester backbone of DNA (Nielsen *et al.*, 1991; Hanvey *et al.*, 1992; Hyrup and Nielsen, 1996; Neilsen, 1996). This chemistry has three important consequences: firstly, in contrast to DNA or phosphorothioate oligonucleotides, PNAs are neutral molecules; secondly, PNAs are achiral, which avoids the need to develop a stereoselective synthesis; and thirdly, PNA synthesis uses standard Boc (Dueholm *et al.*, 1994) or Fmoc (Thomson *et al.*, 1995) protocols for solid-phase peptide synthesis, although other methods, including a modified Merrifield method, have been used (Christensen *et al.*, 1995).

PNA monomers or ready-made oligomers are commercially available from PerSeptive Biosystems (Framingham, MA). PNA syntheses by either Boc or Fmoc protocols are straightforward using manual or automated protocols (Norton *et al.*, 1995). The manual protocol lends itself to the production of chemically modified PNAs or the simultaneous synthesis of families of closely related PNAs.

As with peptide synthesis, the success of a particular PNA synthesis will depend on the properties of the chosen sequence. For example, while in theory PNAs can incorporate any combination of nucleotide bases, the presence of adjacent purines can lead to deletions of one or more residues in the product. In expectation of this difficulty, it is suggested that, in producing PNAs with adjacent purines, one should repeat the coupling of residues likely to be added inefficiently. This should be followed by the purification of PNAs by reverse-phase high-pressure liquid chromatography (Norton *et al.*, 1995) providing yields and purity of product similar to those observed during the synthesis of peptides.

Modifications of PNAs for a given application may be accomplished by coupling amino acids during solid-phase synthesis or by attaching compounds that contain a carboxylic acid group to the exposed N-terminal amine. Alternatively, PNAs can be modified after synthesis by coupling to an introduced lysine or cysteine. The ease with which PNAs can be modified facilitates optimization for better solubility or for specific functional requirements. Once synthesized, the identity of PNAs and their derivatives can be confirmed by mass spectrometry. Several studies have made and utilized modifications of PNAs (Norton *et al.*, 1995; Haaima *et al.*, 1996; Stetsenko *et al.*, 1996; Petersen *et al.*, 1995; Ulmann *et al.*, 1996; Koch *et al.*, 1995; Orum *et al.*, 1995; Footer *et al.*, 1996; Griffith *et al.*, 1995; Kremsky *et al.*, 1996; Pardridge *et al.*, 1995; Boffa *et al.*, 1995; Landsdorp *et al.*, 1996; Gambacorti-Passerini *et al.*, 1996; Armitage *et al.*, 1997; Seeger *et al.*, 1997; Ruskowski *et al.*, 1997). U.S. Patent No. 5,700,922 discusses PNA-DNA-PNA chimeric molecules and their uses in diagnostics, modulating protein in organisms, and treatment of conditions susceptible to therapeutics.

In contrast to DNA and RNA, which contain negatively charged linkages, the PNA backbone is neutral. In spite of this dramatic alteration, PNAs

recognize complementary DNA and RNA by Watson-Crick pairing (Egholm *et al.*, 1993), validating the initial modeling by Nielsen *et al.* (1991). PNAs lack 3' to 5' polarity and can bind in either parallel or antiparallel fashion, with the antiparallel mode being preferred (Egholm *et al.*, 1993).

5 Hybridization of DNA oligonucleotides to DNA and RNA is destabilized by electrostatic repulsion between the negatively charged phosphate backbones of the complementary strands. By contrast, the absence of charge repulsion in PNA-DNA or PNA-RNA duplexes increases the melting temperature (T_m) and reduces the dependence of T_m on the concentration of mono- or divalent cations
10 (Nielsen *et al.*, 1991). The enhanced rate and affinity of hybridization are significant because they are responsible for the surprising ability of PNAs to perform strand invasion of complementary sequences within relaxed double-stranded DNA. In addition, the efficient hybridization at inverted repeats suggests that PNAs can recognize secondary structure effectively within double-stranded DNA. Enhanced
15 recognition also occurs with PNAs immobilized on surfaces, and Wang *et al.* have shown that support-bound PNAs can be used to detect hybridization events (Wang *et al.*, 1996).

One might expect that tight binding of PNAs to complementary sequences would also increase binding to similar (but not identical) sequences, reducing
20 the sequence specificity of PNA recognition. As with DNA hybridization, however, selective recognition can be achieved by balancing oligomer length and incubation temperature. Moreover, selective hybridization of PNAs is encouraged by PNA-DNA hybridization being less tolerant of base mismatches than DNA-DNA hybridization. For example, a single mismatch within a 16 bp PNA-DNA duplex can reduce the T_m by
25 up to 15°C (Egholm *et al.*, 1993). This high level of discrimination has allowed the development of several PNA-based strategies for the analysis of point mutations (Wang *et al.*, 1996; Carlsson *et al.*, 1996; Thiede *et al.*, 1996; Webb and Hurskainen, 1996; Perry-O'Keefe *et al.*, 1996).

High-affinity binding provides clear advantages for molecular
30 recognition and the development of new applications for PNAs. For example, 11-13 nucleotide PNAs inhibit the activity of telomerase, a ribonucleo-protein that extends

telomere ends using an essential RNA template, while the analogous DNA oligomers do not (Norton *et al.*, 1996).

Neutral PNAs are more hydrophobic than analogous DNA oligomers, and this can lead to difficulty solubilizing them at neutral pH, especially if the PNAs have a high purine content or if they have the potential to form secondary structures. Their solubility can be enhanced by attaching one or more positive charges to the PNA termini (Nielsen *et al.*, 1991).

Findings by Allfrey and colleagues suggest that strand invasion will occur spontaneously at sequences within chromosomal DNA (Boffa *et al.*, 1995; Boffa *et al.*, 1996). These studies targeted PNAs to triplet repeats of the nucleotides CAG and used this recognition to purify transcriptionally active DNA (Boffa *et al.*, 1995) and to inhibit transcription (Boffa *et al.*, 1996). This result suggests that if PNAs can be delivered within cells then they will have the potential to be general sequence-specific regulators of gene expression. Studies and reviews concerning the use of PNAs as antisense and anti-gene agents include Nielsen *et al.* (1993b), Hanvey *et al.* (1992), and Good and Nielsen (1997). Koppelhus *et al.* (1997) have used PNAs to inhibit HIV-1 inverse transcription, showing that PNAs may be used for antiviral therapies.

Methods of characterizing the antisense binding properties of PNAs are discussed in Rose (1993) and Jensen *et al.* (1997). Rose uses capillary gel electrophoresis to determine binding of PNAs to their complementary oligonucleotide, measuring the relative binding kinetics and stoichiometry. Similar types of measurements were made by Jensen *et al.* using BIAcore™ technology.

Other applications of PNAs include use in DNA strand invasion (Nielsen *et al.*, 1991), antisense inhibition (Hanvey *et al.*, 1992), mutational analysis (Orum *et al.*, 1993), enhancers of transcription (Mollegaard *et al.*, 1994), nucleic acid purification (Orum *et al.*, 1995), isolation of transcriptionally active genes (Boffa *et al.*, 1995), blocking of transcription factor binding (Vickers *et al.*, 1995), genome cleavage (Veselkov *et al.*, 1996), biosensors (Wang *et al.*, 1996), *in situ* hybridization (Thisted *et al.*, 1996), and in a alternative to Southern blotting (Perry-O'Keefe, 1996).

POLYPEPTIDE COMPOSITIONS

The present invention, in other aspects, provides polypeptide compositions. Generally, a polypeptide of the invention will be an isolated polypeptide (or an epitope, variant, or active fragment thereof) derived from a mammalian species.

- 5 Preferably, the polypeptide is encoded by a polynucleotide sequence disclosed herein or a sequence which hybridizes under moderately stringent conditions to a polynucleotide sequence disclosed herein. Alternatively, the polypeptide may be defined as a polypeptide which comprises a contiguous amino acid sequence from an amino acid sequence disclosed herein, or which polypeptide comprises an entire amino acid
10 sequence disclosed herein.

In the present invention, a polypeptide composition is also understood to comprise one or more polypeptides that are immunologically reactive with antibodies generated against a polypeptide of the invention, particularly a polypeptide having the amino acid sequence disclosed in SEQ ID NO: 786, 787, 791, 793, 795, 797-799, 806
15 or 809, or to active fragments, or to variants or biological functional equivalents thereof.

Likewise, a polypeptide composition of the present invention is understood to comprise one or more polypeptides that are capable of eliciting antibodies that are immunologically reactive with one or more polypeptides encoded by one or
20 more contiguous nucleic acid sequences contained in SEQ ID NO: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266,
25 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826, or to active fragments, or to variants thereof, or to one or more nucleic acid sequences which hybridize to one or more of these sequences under conditions of moderate to high stringency. Particularly illustrative polypeptides include the amino acid sequences disclosed in SEQ ID NO:
30 786, 787, 791, 793, 795, 797-799, 806, 809 and 827.

As used herein, an active fragment of a polypeptide includes a whole or a portion of a polypeptide which is modified by conventional techniques, e.g., mutagenesis, or by addition, deletion, or substitution, but which active fragment exhibits substantially the same structure function, antigenicity, etc., as a polypeptide as described herein.

In certain illustrative embodiments, the polypeptides of the invention will comprise at least an immunogenic portion of a lung tumor protein or a variant thereof, as described herein. As noted above, a "lung tumor protein" is a protein that is expressed by lung tumor cells. Proteins that are lung tumor proteins also react detectably within an immunoassay (such as an ELISA) with antisera from a patient with lung cancer. Polypeptides as described herein may be of any length. Additional sequences derived from the native protein and/or heterologous sequences may be present, and such sequences may (but need not) possess further immunogenic or antigenic properties.

An "immunogenic portion," as used herein is a portion of a protein that is recognized (*i.e.*, specifically bound) by a B-cell and/or T-cell surface antigen receptor. Such immunogenic portions generally comprise at least 5 amino acid residues, more preferably at least 10, and still more preferably at least 20 amino acid residues of a lung tumor protein or a variant thereof. Certain preferred immunogenic portions include peptides in which an N-terminal leader sequence and/or transmembrane domain have been deleted. Other preferred immunogenic portions may contain a small N- and/or C-terminal deletion (*e.g.*, 1-30 amino acids, preferably 5-15 amino acids), relative to the mature protein.

Immunogenic portions may generally be identified using well known techniques, such as those summarized in Paul, *Fundamental Immunology*, 3rd ed., 243-247 (Raven Press, 1993) and references cited therein. Such techniques include screening polypeptides for the ability to react with antigen-specific antibodies, antisera and/or T-cell lines or clones. As used herein, antisera and antibodies are "antigen-specific" if they specifically bind to an antigen (*i.e.*, they react with the protein in an ELISA or other immunoassay, and do not react detectably with unrelated proteins). Such antisera and antibodies may be prepared as described herein, and using well

known techniques. An immunogenic portion of a native lung tumor protein is a portion that reacts with such antisera and/or T-cells at a level that is not substantially less than the reactivity of the full length polypeptide (e.g., in an ELISA and/or T-cell reactivity assay). Such immunogenic portions may react within such assays at a level that is
5 similar to or greater than the reactivity of the full length polypeptide. Such screens may generally be performed using methods well known to those of ordinary skill in the art, such as those described in Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. For example, a polypeptide may be immobilized on a solid support and contacted with patient sera to allow binding of antibodies within the
10 sera to the immobilized polypeptide. Unbound sera may then be removed and bound antibodies detected using, for example, ¹²⁵I-labeled Protein A.

As noted above, a composition may comprise a variant of a native lung tumor protein. A polypeptide "variant," as used herein, is a polypeptide that differs from a native lung tumor protein in one or more substitutions, deletions, additions
15 and/or insertions, such that the immunogenicity of the polypeptide is not substantially diminished. In other words, the ability of a variant to react with antigen-specific antisera may be enhanced or unchanged, relative to the native protein, or may be diminished by less than 50%, and preferably less than 20%, relative to the native protein. Such variants may generally be identified by modifying one of the above
20 polypeptide sequences and evaluating the reactivity of the modified polypeptide with antigen-specific antibodies or antisera as described herein. Preferred variants include those in which one or more portions, such as an N-terminal leader sequence or transmembrane domain, have been removed. Other preferred variants include variants in which a small portion (e.g., 1-30 amino acids, preferably 5-15 amino acids) has been
25 removed from the N- and/or C-terminal of the mature protein.

Polypeptide variants encompassed by the present invention include those exhibiting at least about 70%, 75%, 80%, 85%, 90%, 91%, 92%, 93%, 94%, 95%, 96%, 97%, 98%, or 99% or more identity (determined as described above) to the polypeptides disclosed herein.

30 Preferably, a variant contains conservative substitutions. A "conservative substitution" is one in which an amino acid is substituted for another

amino acid that has similar properties, such that one skilled in the art of peptide chemistry would expect the secondary structure and hydropathic nature of the polypeptide to be substantially unchanged. Amino acid substitutions may generally be made on the basis of similarity in polarity, charge, solubility, hydrophobicity, hydrophilicity and/or the amphipathic nature of the residues. For example, negatively charged amino acids include aspartic acid and glutamic acid; positively charged amino acids include lysine and arginine; and amino acids with uncharged polar head groups having similar hydrophilicity values include leucine, isoleucine and valine; glycine and alanine; asparagine and glutamine; and serine, threonine, phenylalanine and tyrosine. Other groups of amino acids that may represent conservative changes include: (1) ala, pro, gly, glu, asp, gln, asn, ser, thr; (2) cys, ser, tyr, thr; (3) val, ile, leu, met, ala, phe; (4) lys, arg, his; and (5) phe, tyr, trp, his. A variant may also, or alternatively, contain nonconservative changes. In a preferred embodiment, variant polypeptides differ from a native sequence by substitution, deletion or addition of five amino acids or fewer. Variants may also (or alternatively) be modified by, for example, the deletion or addition of amino acids that have minimal influence on the immunogenicity, secondary structure and hydropathic nature of the polypeptide.

As noted above, polypeptides may comprise a signal (or leader) sequence at the N-terminal end of the protein, which co-translationally or post-translationally directs transfer of the protein. The polypeptide may also be conjugated to a linker or other sequence for ease of synthesis, purification or identification of the polypeptide (*e.g.*, poly-His), or to enhance binding of the polypeptide to a solid support. For example, a polypeptide may be conjugated to an immunoglobulin Fc region.

Polypeptides may be prepared using any of a variety of well known techniques. Recombinant polypeptides encoded by DNA sequences as described above may be readily prepared from the DNA sequences using any of a variety of expression vectors known to those of ordinary skill in the art. Expression may be achieved in any appropriate host cell that has been transformed or transfected with an expression vector containing a DNA molecule that encodes a recombinant polypeptide. Suitable host cells include prokaryotes, yeast, and higher eukaryotic cells, such as mammalian cells and plant cells. Preferably, the host cells employed are *E. coli*, yeast or a mammalian

cell line such as COS or CHO. Supernatants from suitable host/vector systems which secrete recombinant protein or polypeptide into culture media may be first concentrated using a commercially available filter. Following concentration, the concentrate may be applied to a suitable purification matrix such as an affinity matrix or an ion exchange resin. Finally, one or more reverse phase HPLC steps can be employed to further purify a recombinant polypeptide.

Portions and other variants having less than about 100 amino acids, and generally less than about 50 amino acids, may also be generated by synthetic means, using techniques well known to those of ordinary skill in the art. For example, such polypeptides may be synthesized using any of the commercially available solid-phase techniques, such as the Merrifield solid-phase synthesis method, where amino acids are sequentially added to a growing amino acid chain. See Merrifield, *J. Am. Chem. Soc.* 85:2149-2146, 1963. Equipment for automated synthesis of polypeptides is commercially available from suppliers such as Perkin Elmer/Applied BioSystems Division (Foster City, CA), and may be operated according to the manufacturer's instructions.

Within certain specific embodiments, a polypeptide may be a fusion protein that comprises multiple polypeptides as described herein, or that comprises at least one polypeptide as described herein and an unrelated sequence, such as a known tumor protein. A fusion partner may, for example, assist in providing T helper epitopes (an immunological fusion partner), preferably T helper epitopes recognized by humans, or may assist in expressing the protein (an expression enhancer) at higher yields than the native recombinant protein. Certain preferred fusion partners are both immunological and expression enhancing fusion partners. Other fusion partners may be selected so as to increase the solubility of the protein or to enable the protein to be targeted to desired intracellular compartments. Still further fusion partners include affinity tags, which facilitate purification of the protein.

Fusion proteins may generally be prepared using standard techniques, including chemical conjugation. Preferably, a fusion protein is expressed as a recombinant protein, allowing the production of increased levels, relative to a non-fused protein, in an expression system. Briefly, DNA sequences encoding the polypeptide

components may be assembled separately, and ligated into an appropriate expression vector. The 3' end of the DNA sequence encoding one polypeptide component is ligated, with or without a peptide linker, to the 5' end of a DNA sequence encoding the second polypeptide component so that the reading frames of the sequences are in phase.

- 5 This permits translation into a single fusion protein that retains the biological activity of both component polypeptides.

A peptide linker sequence may be employed to separate the first and second polypeptide components by a distance sufficient to ensure that each polypeptide folds into its secondary and tertiary structures. Such a peptide linker sequence is incorporated into the fusion protein using standard techniques well known in the art. Suitable peptide linker sequences may be chosen based on the following factors: (1) their ability to adopt a flexible extended conformation; (2) their inability to adopt a secondary structure that could interact with functional epitopes on the first and second polypeptides; and (3) the lack of hydrophobic or charged residues that might react with the polypeptide functional epitopes. Preferred peptide linker sequences contain Gly, Asn and Ser residues. Other near neutral amino acids, such as Thr and Ala may also be used in the linker sequence. Amino acid sequences which may be usefully employed as linkers include those disclosed in Maratea *et al.*, *Gene* 40:39-46, 1985; Murphy *et al.*, *Proc. Natl. Acad. Sci. USA* 83:8258-8262, 1986; U.S. Patent No. 4,935,233 and U.S. Patent No. 4,751,180. The linker sequence may generally be from 1 to about 50 amino acids in length. Linker sequences are not required when the first and second polypeptides have non-essential N-terminal amino acid regions that can be used to separate the functional domains and prevent steric interference.

The ligated DNA sequences are operably linked to suitable transcriptional or translational regulatory elements. The regulatory elements responsible for expression of DNA are located only 5' to the DNA sequence encoding the first polypeptides. Similarly, stop codons required to end translation and transcription termination signals are only present 3' to the DNA sequence encoding the second polypeptide.

- 30 Fusion proteins are also provided. Such proteins comprise a polypeptide as described herein together with an unrelated immunogenic protein. Preferably the

immunogenic protein is capable of eliciting a recall response. Examples of such proteins include tetanus, tuberculosis and hepatitis proteins (*see*, for example, Stoute *et al. New Engl. J. Med.*, 336:86-91, 1997).

Within preferred embodiments, an immunological fusion partner is
5 derived from protein D, a surface protein of the gram-negative bacterium *Haemophilus influenza B* (WO 91/18926). Preferably, a protein D derivative comprises approximately the first third of the protein (*e.g.*, the first N-terminal 100-110 amino acids), and a protein D derivative may be lipidated. Within certain preferred
10 embodiments, the first 109 residues of a Lipoprotein D fusion partner is included on the N-terminus to provide the polypeptide with additional exogenous T-cell epitopes and to increase the expression level in *E. coli* (thus functioning as an expression enhancer). The lipid tail ensures optimal presentation of the antigen to antigen presenting cells. Other fusion partners include the non-structural protein from influenzae virus, NS1 (hemagglutinin). Typically, the N-terminal 81 amino acids are used, although different
15 fragments that include T-helper epitopes may be used.

In another embodiment, the immunological fusion partner is the protein known as LYTA, or a portion thereof (preferably a C-terminal portion). LYTA is derived from *Streptococcus pneumoniae*, which synthesizes an N-acetyl-L-alanine amidase known as amidase LYTA (encoded by the *LytA* gene; *Gene* 43:265-292,
20 1986). LYTA is an autolysin that specifically degrades certain bonds in the peptidoglycan backbone. The C-terminal domain of the LYTA protein is responsible for the affinity to the choline or to some choline analogues such as DEAE. This property has been exploited for the development of *E. coli* C-LYTA expressing plasmids useful for expression of fusion proteins. Purification of hybrid proteins
25 containing the C-LYTA fragment at the amino terminus has been described (*see Biotechnology* 10:795-798, 1992). Within a preferred embodiment, a repeat portion of LYTA may be incorporated into a fusion protein. A repeat portion is found in the C-terminal region starting at residue 178. A particularly preferred repeat portion incorporates residues 188-305.

30 In general, polypeptides (including fusion proteins) and polynucleotides as described herein are isolated. An "isolated" polypeptide or polynucleotide is one that

is removed from its original environment. For example, a naturally-occurring protein is isolated if it is separated from some or all of the coexisting materials in the natural system. Preferably, such polypeptides are at least about 90% pure, more preferably at least about 95% pure and most preferably at least about 99% pure. A polynucleotide is
5 considered to be isolated if, for example, it is cloned into a vector that is not a part of the natural environment.

BINDING AGENTS

The present invention further provides agents, such as antibodies and antigen-binding fragments thereof, that specifically bind to a lung tumor protein. As
10 used herein, an antibody, or antigen-binding fragment thereof, is said to "specifically bind" to a lung tumor protein if it reacts at a detectable level (within, for example, an ELISA) with a lung tumor protein, and does not react detectably with unrelated proteins under similar conditions. As used herein, "binding" refers to a noncovalent association between two separate molecules such that a complex is formed. The ability to bind may
15 be evaluated by, for example, determining a binding constant for the formation of the complex. The binding constant is the value obtained when the concentration of the complex is divided by the product of the component concentrations. In general, two compounds are said to "bind," in the context of the present invention, when the binding constant for complex formation exceeds about 10^3 L/mol. The binding constant may be
20 determined using methods well known in the art.

Binding agents may be further capable of differentiating between patients with and without a cancer, such as lung cancer, using the representative assays provided herein. In other words, antibodies or other binding agents that bind to a lung tumor protein will generate a signal indicating the presence of a cancer in at least about
25 20% of patients with the disease, and will generate a negative signal indicating the absence of the disease in at least about 90% of individuals without the cancer. To determine whether a binding agent satisfies this requirement, biological samples (e.g., blood, sera, sputum, urine and/or tumor biopsies) from patients with and without a cancer (as determined using standard clinical tests) may be assayed as described herein
30 for the presence of polypeptides that bind to the binding agent. It will be apparent that a

statistically significant number of samples with and without the disease should be assayed. Each binding agent should satisfy the above criteria; however, those of ordinary skill in the art will recognize that binding agents may be used in combination to improve sensitivity.

5 Any agent that satisfies the above requirements may be a binding agent. For example, a binding agent may be a ribosome, with or without a peptide component, an RNA molecule or a polypeptide. In a preferred embodiment, a binding agent is an antibody or an antigen-binding fragment thereof. Antibodies may be prepared by any of a variety of techniques known to those of ordinary skill in the art. *See, e.g.,* Harlow
10 and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. In general, antibodies can be produced by cell culture techniques, including the generation of monoclonal antibodies as described herein, or via transfection of antibody genes into suitable bacterial or mammalian cell hosts, in order to allow for the production of recombinant antibodies. In one technique, an immunogen comprising the polypeptide
15 is initially injected into any of a wide variety of mammals (*e.g.*, mice, rats, rabbits, sheep or goats). In this step, the polypeptides of this invention may serve as the immunogen without modification. Alternatively, particularly for relatively short polypeptides, a superior immune response may be elicited if the polypeptide is joined to a carrier protein, such as bovine serum albumin or keyhole limpet hemocyanin. The
20 immunogen is injected into the animal host, preferably according to a predetermined schedule incorporating one or more booster immunizations, and the animals are bled periodically. Polyclonal antibodies specific for the polypeptide may then be purified from such antisera by, for example, affinity chromatography using the polypeptide coupled to a suitable solid support.

25 Monoclonal antibodies specific for an antigenic polypeptide of interest may be prepared, for example, using the technique of Kohler and Milstein, *Eur. J. Immunol.* 6:511-519, 1976, and improvements thereto. Briefly, these methods involve the preparation of immortal cell lines capable of producing antibodies having the desired specificity (*i.e.*, reactivity with the polypeptide of interest). Such cell lines may
30 be produced, for example, from spleen cells obtained from an animal immunized as described above. The spleen cells are then immortalized by, for example, fusion with a

myeloma cell fusion partner, preferably one that is syngeneic with the immunized animal. A variety of fusion techniques may be employed. For example, the spleen cells and myeloma cells may be combined with a nonionic detergent for a few minutes and then plated at low density on a selective medium that supports the growth of hybrid
5 cells, but not myeloma cells. A preferred selection technique uses HAT (hypoxanthine, aminopterin, thymidine) selection. After a sufficient time, usually about 1 to 2 weeks, colonies of hybrids are observed. Single colonies are selected and their culture supernatants tested for binding activity against the polypeptide. Hybridomas having high reactivity and specificity are preferred.

10 Monoclonal antibodies may be isolated from the supernatants of growing hybridoma colonies. In addition, various techniques may be employed to enhance the yield, such as injection of the hybridoma cell line into the peritoneal cavity of a suitable vertebrate host, such as a mouse. Monoclonal antibodies may then be harvested from the ascites fluid or the blood. Contaminants may be removed from the antibodies by
15 conventional techniques, such as chromatography, gel filtration, precipitation, and extraction. The polypeptides of this invention may be used in the purification process in, for example, an affinity chromatography step.

Within certain embodiments, the use of antigen-binding fragments of antibodies may be preferred. Such fragments include Fab fragments, which may be
20 prepared using standard techniques. Briefly, immunoglobulins may be purified from rabbit serum by affinity chromatography on Protein A bead columns (Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988) and digested by papain to yield Fab and Fc fragments. The Fab and Fc fragments may be separated by affinity chromatography on protein A bead columns.

25 Monoclonal antibodies of the present invention may be coupled to one or more therapeutic agents. Suitable agents in this regard include radionuclides, differentiation inducers, drugs, toxins, and derivatives thereof. Preferred radionuclides include ^{90}Y , ^{123}I , ^{125}I , ^{131}I , ^{186}Re , ^{188}Re , ^{211}At , and ^{212}Bi . Preferred drugs include methotrexate, and pyrimidine and purine analogs. Preferred differentiation inducers
30 include phorbol esters and butyric acid. Preferred toxins include ricin, abrin, diphtheria

toxin, cholera toxin, gelonin, Pseudomonas exotoxin, Shigella toxin, and pokeweed antiviral protein.

A therapeutic agent may be coupled (*e.g.*, covalently bonded) to a suitable monoclonal antibody either directly or indirectly (*e.g.*, via a linker group). A
5 direct reaction between an agent and an antibody is possible when each possesses a substituent capable of reacting with the other. For example, a nucleophilic group, such as an amino or sulfhydryl group, on one may be capable of reacting with a carbonyl-containing group, such as an anhydride or an acid halide, or with an alkyl group containing a good leaving group (*e.g.*, a halide) on the other.

10 Alternatively, it may be desirable to couple a therapeutic agent and an antibody via a linker group. A linker group can function as a spacer to distance an antibody from an agent in order to avoid interference with binding capabilities. A linker group can also serve to increase the chemical reactivity of a substituent on an agent or an antibody, and thus increase the coupling efficiency. An increase in
15 chemical reactivity may also facilitate the use of agents, or functional groups on agents, which otherwise would not be possible.

It will be evident to those skilled in the art that a variety of bifunctional or polyfunctional reagents, both homo- and hetero-functional (such as those described in the catalog of the Pierce Chemical Co., Rockford, IL), may be employed as the linker
20 group. Coupling may be effected, for example, through amino groups, carboxyl groups, sulfhydryl groups or oxidized carbohydrate residues. There are numerous references describing such methodology, *e.g.*, U.S. Patent No. 4,671,958, to Rodwell *et al.*

Where a therapeutic agent is more potent when free from the antibody portion of the immunoconjugates of the present invention, it may be desirable to use a
25 linker group which is cleavable during or upon internalization into a cell. A number of different cleavable linker groups have been described. The mechanisms for the intracellular release of an agent from these linker groups include cleavage by reduction of a disulfide bond (*e.g.*, U.S. Patent No. 4,489,710, to Spitler), by irradiation of a photolabile bond (*e.g.*, U.S. Patent No. 4,625,014, to Senter *et al.*), by hydrolysis of
30 derivatized amino acid side chains (*e.g.*, U.S. Patent No. 4,638,045, to Kohn *et al.*), by

serum complement-mediated hydrolysis (*e.g.*, U.S. Patent No. 4,671,958, to Rodwell *et al.*), and acid-catalyzed hydrolysis (*e.g.*, U.S. Patent No. 4,569,789, to Blattler *et al.*).

It may be desirable to couple more than one agent to an antibody. In one embodiment, multiple molecules of an agent are coupled to one antibody molecule. In another embodiment, more than one type of agent may be coupled to one antibody. Regardless of the particular embodiment, immunoconjugates with more than one agent may be prepared in a variety of ways. For example, more than one agent may be coupled directly to an antibody molecule, or linkers that provide multiple sites for attachment can be used. Alternatively, a carrier can be used.

A carrier may bear the agents in a variety of ways, including covalent bonding either directly or via a linker group. Suitable carriers include proteins such as albumins (*e.g.*, U.S. Patent No. 4,507,234, to Kato *et al.*), peptides and polysaccharides such as aminodextran (*e.g.*, U.S. Patent No. 4,699,784, to Shih *et al.*). A carrier may also bear an agent by noncovalent bonding or by encapsulation, such as within a liposome vesicle (*e.g.*, U.S. Patent Nos. 4,429,008 and 4,873,088). Carriers specific for radionuclide agents include radiohalogenated small molecules and chelating compounds. For example, U.S. Patent No. 4,735,792 discloses representative radiohalogenated small molecules and their synthesis. A radionuclide chelate may be formed from chelating compounds that include those containing nitrogen and sulfur atoms as the donor atoms for binding the metal, or metal oxide, radionuclide. For example, U.S. Patent No. 4,673,562, to Davison *et al.* discloses representative chelating compounds and their synthesis.

A variety of routes of administration for the antibodies and immunoconjugates may be used. Typically, administration will be intravenous, intramuscular, subcutaneous or in the bed of a resected tumor. It will be evident that the precise dose of the antibody/immunoconjugate will vary depending upon the antibody used, the antigen density on the tumor, and the rate of clearance of the antibody.

T CELLS

Immunotherapeutic compositions may also, or alternatively, comprise T cells specific for a lung tumor protein. Such cells may generally be prepared *in vitro* or *ex vivo*, using standard procedures. For example, T cells may be isolated from bone marrow, peripheral blood, or a fraction of bone marrow or peripheral blood of a patient, using a commercially available cell separation system, such as the Isolex™ System, available from Nexell Therapeutics, Inc. (Irvine, CA; see also U.S. Patent No. 5,240,856; U.S. Patent No. 5,215,926; WO 89/06280; WO 91/16116 and WO 92/07243). Alternatively, T cells may be derived from related or unrelated humans, non-human mammals, cell lines or cultures.

T cells may be stimulated with a lung tumor polypeptide, polynucleotide encoding a lung tumor polypeptide and/or an antigen presenting cell (APC) that expresses such a polypeptide. Such stimulation is performed under conditions and for a time sufficient to permit the generation of T cells that are specific for the polypeptide. Preferably, a lung tumor polypeptide or polynucleotide is present within a delivery vehicle, such as a microsphere, to facilitate the generation of specific T cells.

T cells are considered to be specific for a lung tumor polypeptide if the T cells specifically proliferate, secrete cytokines or kill target cells coated with the polypeptide or expressing a gene encoding the polypeptide. T cell specificity may be evaluated using any of a variety of standard techniques. For example, within a chromium release assay or proliferation assay, a stimulation index of more than two fold increase in lysis and/or proliferation, compared to negative controls, indicates T cell specificity. Such assays may be performed, for example, as described in Chen *et al.*, *Cancer Res.* 54:1065-1070, 1994. Alternatively, detection of the proliferation of T cells may be accomplished by a variety of known techniques. For example, T cell proliferation can be detected by measuring an increased rate of DNA synthesis (*e.g.*, by pulse-labeling cultures of T cells with tritiated thymidine and measuring the amount of tritiated thymidine incorporated into DNA). Contact with a lung tumor polypeptide (100 ng/ml - 100 µg/ml, preferably 200 ng/ml - 25 µg/ml) for 3 - 7 days should result in at least a two fold increase in proliferation of the T cells. Contact as described above for 2-3 hours should result in activation of the T cells, as measured using standard

cytokine assays in which a two fold increase in the level of cytokine release (*e.g.*, TNF or IFN- γ) is indicative of T cell activation (*see* Coligan *et al.*, Current Protocols in Immunology, vol. 1, Wiley Interscience (Greene 1998)). T cells that have been activated in response to a lung tumor polypeptide, polynucleotide or polypeptide-expressing APC may be CD4⁺ and/or CD8⁺. Lung tumor protein-specific T cells may be expanded using standard techniques. Within preferred embodiments, the T cells are derived from a patient, a related donor or an unrelated donor, and are administered to the patient following stimulation and expansion.

For therapeutic purposes, CD4⁺ or CD8⁺ T cells that proliferate in response to a lung tumor polypeptide, polynucleotide or APC can be expanded in number either *in vitro* or *in vivo*. Proliferation of such T cells *in vitro* may be accomplished in a variety of ways. For example, the T cells can be re-exposed to a lung tumor polypeptide, or a short peptide corresponding to an immunogenic portion of such a polypeptide, with or without the addition of T cell growth factors, such as interleukin-2, and/or stimulator cells that synthesize a lung tumor polypeptide. Alternatively, one or more T cells that proliferate in the presence of a lung tumor protein can be expanded in number by cloning. Methods for cloning cells are well known in the art, and include limiting dilution.

PHARMACEUTICAL COMPOSITIONS

In additional embodiments, the present invention concerns formulation of one or more of the polynucleotide, polypeptide, T-cell and/or antibody compositions disclosed herein in pharmaceutically-acceptable solutions for administration to a cell or an animal, either alone, or in combination with one or more other modalities of therapy.

It will also be understood that, if desired, the nucleic acid segment, RNA, DNA or PNA compositions that express a polypeptide as disclosed herein may be administered in combination with other agents as well, such as, *e.g.*, other proteins or polypeptides or various pharmaceutically-active agents. In fact, there is virtually no limit to other components that may also be included, given that the additional agents do not cause a significant adverse effect upon contact with the target cells or host tissues. The compositions may thus be delivered along with various other agents as required in

the particular instance. Such compositions may be purified from host cells or other biological sources, or alternatively may be chemically synthesized as described herein. Likewise, such compositions may further comprise substituted or derivatized RNA or DNA compositions.

5 Formulation of pharmaceutically-acceptable excipients and carrier solutions is well-known to those of skill in the art, as is the development of suitable dosing and treatment regimens for using the particular compositions described herein in a variety of treatment regimens, including *e.g.*, oral, parenteral, intravenous, intranasal, and intramuscular administration and formulation.

10 1. ORAL DELIVERY

 In certain applications, the pharmaceutical compositions disclosed herein may be delivered *via* oral administration to an animal. As such, these compositions may be formulated with an inert diluent or with an assimilable edible carrier, or they may be enclosed in hard- or soft-shell gelatin capsule, or they may be compressed into
15 tablets, or they may be incorporated directly with the food of the diet.

 The active compounds may even be incorporated with excipients and used in the form of ingestible tablets, buccal tables, troches, capsules, elixirs, suspensions, syrups, wafers, and the like (Mathiowitz *et al.*, 1997; Hwang *et al.*, 1998; U. S. Patent 5,641,515; U. S. Patent 5,580,579 and U. S. Patent 5,792,451, each
20 specifically incorporated herein by reference in its entirety). The tablets, troches, pills, capsules and the like may also contain the following: a binder, as gum tragacanth, acacia, cornstarch, or gelatin; excipients, such as dicalcium phosphate; a disintegrating agent, such as corn starch, potato starch, alginic acid and the like; a lubricant, such as magnesium stearate; and a sweetening agent, such as sucrose, lactose or saccharin may
25 be added or a flavoring agent, such as peppermint, oil of wintergreen, or cherry flavoring. When the dosage unit form is a capsule, it may contain, in addition to materials of the above type, a liquid carrier. Various other materials may be present as coatings or to otherwise modify the physical form of the dosage unit. For instance, tablets, pills, or capsules may be coated with shellac, sugar, or both. A syrup or elixir
30 may contain the active compound sucrose as a sweetening agent methyl and

propylparabens as preservatives, a dye and flavoring, such as cherry or orange flavor. Of course, any material used in preparing any dosage unit form should be pharmaceutically pure and substantially non-toxic in the amounts employed. In addition, the active compounds may be incorporated into sustained-release preparation
5 and formulations.

Typically, these formulations may contain at least about 0.1% of the active compound or more, although the percentage of the active ingredient(s) may, of course, be varied and may conveniently be between about 1 or 2% and about 60% or 70% or more of the weight or volume of the total formulation. Naturally, the amount of
10 active compound(s) in each therapeutically useful composition may be prepared in such a way that a suitable dosage will be obtained in any given unit dose of the compound. Factors such as solubility, bioavailability, biological half-life, route of administration, product shelf life, as well as other pharmacological considerations will be contemplated by one skilled in the art of preparing such pharmaceutical formulations, and as such, a
15 variety of dosages and treatment regimens may be desirable.

For oral administration the compositions of the present invention may alternatively be incorporated with one or more excipients in the form of a mouthwash, dentifrice, buccal tablet, oral spray, or sublingual orally-administered formulation. For example, a mouthwash may be prepared incorporating the active ingredient in the
20 required amount in an appropriate solvent, such as a sodium borate solution (Dobell's Solution). Alternatively, the active ingredient may be incorporated into an oral solution such as one containing sodium borate, glycerin and potassium bicarbonate, or dispersed in a dentifrice, or added in a therapeutically-effective amount to a composition that may include water, binders, abrasives, flavoring agents, foaming agents, and humectants.
25 Alternatively the compositions may be fashioned into a tablet or solution form that may be placed under the tongue or otherwise dissolved in the mouth.

2. INJECTABLE DELIVERY

In certain circumstances it will be desirable to deliver the pharmaceutical compositions disclosed herein parenterally, intravenously, intramuscularly, or even
30 intraperitoneally as described in U. S. Patent 5,543,158; U. S. Patent 5,641,515 and U.

S. Patent 5,399,363 (each specifically incorporated herein by reference in its entirety). Solutions of the active compounds as free base or pharmacologically acceptable salts may be prepared in water suitably mixed with a surfactant, such as hydroxypropylcellulose. Dispersions may also be prepared in glycerol, liquid
5 polyethylene glycols, and mixtures thereof and in oils. Under ordinary conditions of storage and use, these preparations contain a preservative to prevent the growth of microorganisms.

The pharmaceutical forms suitable for injectable use include sterile aqueous solutions or dispersions and sterile powders for the extemporaneous
10 preparation of sterile injectable solutions or dispersions (U. S. Patent 5,466,468, specifically incorporated herein by reference in its entirety). In all cases the form must be sterile and must be fluid to the extent that easy syringability exists. It must be stable under the conditions of manufacture and storage and must be preserved against the contaminating action of microorganisms, such as bacteria and fungi. The carrier can be
15 a solvent or dispersion medium containing, for example, water, ethanol, polyol (*e.g.*, glycerol, propylene glycol, and liquid polyethylene glycol, and the like), suitable mixtures thereof, and/or vegetable oils. Proper fluidity may be maintained, for example, by the use of a coating, such as lecithin, by the maintenance of the required particle size in the case of dispersion and by the use of surfactants. The prevention of
20 the action of microorganisms can be facilitated by various antibacterial and antifungal agents, for example, parabens, chlorobutanol, phenol, sorbic acid, thimerosal, and the like. In many cases, it will be preferable to include isotonic agents, for example, sugars or sodium chloride. Prolonged absorption of the injectable compositions can be brought about by the use in the compositions of agents delaying absorption, for
25 example, aluminum monostearate and gelatin.

For parenteral administration in an aqueous solution, for example, the solution should be suitably buffered if necessary and the liquid diluent first rendered isotonic with sufficient saline or glucose. These particular aqueous solutions are especially suitable for intravenous, intramuscular, subcutaneous and intraperitoneal
30 administration. In this connection, a sterile aqueous medium that can be employed will be known to those of skill in the art in light of the present disclosure. For example, one

dosage may be dissolved in 1 ml of isotonic NaCl solution and either added to 1000 ml of hypodermoclysis fluid or injected at the proposed site of infusion, (see for example, "Remington's Pharmaceutical Sciences" 15th Edition, pages 1035-1038 and 1570-1580). Some variation in dosage will necessarily occur depending on the condition of
5 the subject being treated. The person responsible for administration will, in any event, determine the appropriate dose for the individual subject. Moreover, for human administration, preparations should meet sterility, pyrogenicity, and the general safety and purity standards as required by FDA Office of Biologics standards.

Sterile injectable solutions are prepared by incorporating the active
10 compounds in the required amount in the appropriate solvent with various of the other ingredients enumerated above, as required, followed by filtered sterilization. Generally, dispersions are prepared by incorporating the various sterilized active ingredients into a sterile vehicle which contains the basic dispersion medium and the required other ingredients from those enumerated above. In the case of sterile powders for the
15 preparation of sterile injectable solutions, the preferred methods of preparation are vacuum-drying and freeze-drying techniques which yield a powder of the active ingredient plus any additional desired ingredient from a previously sterile-filtered solution thereof.

The compositions disclosed herein may be formulated in a neutral or salt
20 form. Pharmaceutically-acceptable salts, include the acid addition salts (formed with the free amino groups of the protein) and which are formed with inorganic acids such as, for example, hydrochloric or phosphoric acids, or such organic acids as acetic, oxalic, tartaric, mandelic, and the like. Salts formed with the free carboxyl groups can also be derived from inorganic bases such as, for example, sodium, potassium,
25 ammonium, calcium, or ferric hydroxides, and such organic bases as isopropylamine, trimethylamine, histidine, procaine and the like. Upon formulation, solutions will be administered in a manner compatible with the dosage formulation and in such amount as is therapeutically effective. The formulations are easily administered in a variety of dosage forms such as injectable solutions, drug-release capsules, and the like.

30 As used herein, "carrier" includes any and all solvents, dispersion media, vehicles, coatings, diluents, antibacterial and antifungal agents, isotonic and absorption

delaying agents, buffers, carrier solutions, suspensions, colloids, and the like. The use of such media and agents for pharmaceutical active substances is well known in the art. Except insofar as any conventional media or agent is incompatible with the active ingredient, its use in the therapeutic compositions is contemplated. Supplementary
5 active ingredients can also be incorporated into the compositions.

The phrase "pharmaceutically-acceptable" refers to molecular entities and compositions that do not produce an allergic or similar untoward reaction when administered to a human. The preparation of an aqueous composition that contains a protein as an active ingredient is well understood in the art. Typically, such
10 compositions are prepared as injectables, either as liquid solutions or suspensions; solid forms suitable for solution in, or suspension in, liquid prior to injection can also be prepared. The preparation can also be emulsified.

3. NASAL DELIVERY

In certain embodiments, the pharmaceutical compositions may be
15 delivered by intranasal sprays, inhalation, and/or other aerosol delivery vehicles. Methods for delivering genes, nucleic acids, and peptide compositions directly to the lungs *via* nasal aerosol sprays has been described *e.g.*, in U. S. Patent 5,756,353 and U. S. Patent 5,804,212 (each specifically incorporated herein by reference in its entirety). Likewise, the delivery of drugs using intranasal microparticle resins (Takenaga *et al.*,
20 1998) and lysophosphatidyl-glycerol compounds (U. S. Patent 5,725,871, specifically incorporated herein by reference in its entirety) are also well-known in the pharmaceutical arts. Likewise, transmucosal drug delivery in the form of a polytetrafluoroethylene support matrix is described in U. S. Patent 5,780,045 (specifically incorporated herein by reference in its entirety).

25 4. LIPOSOME-, NANOCAPSULE-, AND MICROPARTICLE-MEDIATED DELIVERY

In certain embodiments, the inventors contemplate the use of liposomes, nanocapsules, microparticles, microspheres, lipid particles, vesicles, and the like, for the introduction of the compositions of the present invention into suitable host cells. In particular, the compositions of the present invention may be formulated for delivery

either encapsulated in a lipid particle, a liposome, a vesicle, a nanosphere, or a nanoparticle or the like.

Such formulations may be preferred for the introduction of pharmaceutically-acceptable formulations of the nucleic acids or constructs disclosed
5 herein. The formation and use of liposomes is generally known to those of skill in the art (see for example, Couvreur *et al.*, 1977; Couvreur, 1988; Lasic, 1998; which describes the use of liposomes and nanocapsules in the targeted antibiotic therapy for intracellular bacterial infections and diseases). Recently, liposomes were developed with improved serum stability and circulation half-times (Gabizon and
10 Papahadjopoulos, 1988; Allen and Choun, 1987; U. S. Patent 5,741,516, specifically incorporated herein by reference in its entirety). Further, various methods of liposome and liposome like preparations as potential drug carriers have been reviewed (Takakura, 1998; Chandran *et al.*, 1997; Margalit, 1995; U. S. Patent 5,567,434; U. S. Patent 5,552,157; U. S. Patent 5,565,213; U. S. Patent 5,738,868 and U. S. Patent 5,795,587,
15 each specifically incorporated herein by reference in its entirety).

Liposomes have been used successfully with a number of cell types that are normally resistant to transfection by other procedures including T cell suspensions, primary hepatocyte cultures and PC 12 cells (Renneisen *et al.*, 1990; Muller *et al.*, 1990). In addition, liposomes are free of the DNA length constraints that are typical of
20 viral-based delivery systems. Liposomes have been used effectively to introduce genes, drugs (Heath and Martin, 1986; Heath *et al.*, 1986; Balazsovits *et al.*, 1989; Fresta and Puglisi, 1996), radiotherapeutic agents (Pikul *et al.*, 1987), enzymes (Imaizumi *et al.*, 1990a; Imaizumi *et al.*, 1990b), viruses (Faller and Baltimore, 1984), transcription factors and allosteric effectors (Nicolau and Gersonde, 1979) into a variety of cultured
25 cell lines and animals. In addition, several successful clinical trials examining the effectiveness of liposome-mediated drug delivery have been completed (Lopez-Berestein *et al.*, 1985a; 1985b; Coune, 1988; Sculier *et al.*, 1988). Furthermore, several studies suggest that the use of liposomes is not associated with autoimmune responses, toxicity or gonadal localization after systemic delivery (Mori and Fukatsu, 1992).

30 Liposomes are formed from phospholipids that are dispersed in an aqueous medium and spontaneously form multilamellar concentric bilayer vesicles

(also termed multilamellar vesicles (MLVs). MLVs generally have diameters of from 25 nm to 4 μ m. Sonication of MLVs results in the formation of small unilamellar vesicles (SUVs) with diameters in the range of 200 to 500 Å, containing an aqueous solution in the core.

5 Liposomes bear resemblance to cellular membranes and are contemplated for use in connection with the present invention as carriers for the peptide compositions. They are widely suitable as both water- and lipid-soluble substances can be entrapped, *i.e.* in the aqueous spaces and within the bilayer itself, respectively. It is possible that the drug-bearing liposomes may even be employed for site-specific
10 delivery of active agents by selectively modifying the liposomal formulation.

 In addition to the teachings of Couvreur *et al.* (1977; 1988), the following information may be utilized in generating liposomal formulations. Phospholipids can form a variety of structures other than liposomes when dispersed in water, depending on the molar ratio of lipid to water. At low ratios the liposome is the
15 preferred structure. The physical characteristics of liposomes depend on pH, ionic strength and the presence of divalent cations. Liposomes can show low permeability to ionic and polar substances, but at elevated temperatures undergo a phase transition which markedly alters their permeability. The phase transition involves a change from a closely packed, ordered structure, known as the gel state, to a loosely packed, less-
20 ordered structure, known as the fluid state. This occurs at a characteristic phase-transition temperature and results in an increase in permeability to ions, sugars and drugs.

 In addition to temperature, exposure to proteins can alter the permeability of liposomes. Certain soluble proteins, such as cytochrome c, bind,
25 deform and penetrate the bilayer, thereby causing changes in permeability. Cholesterol inhibits this penetration of proteins, apparently by packing the phospholipids more tightly. It is contemplated that the most useful liposome formations for antibiotic and inhibitor delivery will contain cholesterol.

 The ability to trap solutes varies between different types of liposomes.
30 For example, MLVs are moderately efficient at trapping solutes, but SUVs are extremely inefficient. SUVs offer the advantage of homogeneity and reproducibility in

size distribution, however, and a compromise between size and trapping efficiency is offered by large unilamellar vesicles (LUVs). These are prepared by ether evaporation and are three to four times more efficient at solute entrapment than MLVs.

In addition to liposome characteristics, an important determinant in
5 entrapping compounds is the physicochemical properties of the compound itself. Polar compounds are trapped in the aqueous spaces and nonpolar compounds bind to the lipid bilayer of the vesicle. Polar compounds are released through permeation or when the bilayer is broken, but nonpolar compounds remain affiliated with the bilayer unless it is disrupted by temperature or exposure to lipoproteins. Both types show maximum
10 efflux rates at the phase transition temperature.

Liposomes interact with cells *via* four different mechanisms: endocytosis by phagocytic cells of the reticuloendothelial system such as macrophages and neutrophils; adsorption to the cell surface, either by nonspecific weak hydrophobic or electrostatic forces, or by specific interactions with cell-surface components; fusion
15 with the plasma cell membrane by insertion of the lipid bilayer of the liposome into the plasma membrane, with simultaneous release of liposomal contents into the cytoplasm; and by transfer of liposomal lipids to cellular or subcellular membranes, or vice versa, without any association of the liposome contents. It often is difficult to determine which mechanism is operative and more than one may operate at the same time.

20 The fate and disposition of intravenously injected liposomes depend on their physical properties, such as size, fluidity, and surface charge. They may persist in tissues for h or days, depending on their composition, and half lives in the blood range from min to several h. Larger liposomes, such as MLVs and LUVs, are taken up rapidly by phagocytic cells of the reticuloendothelial system, but physiology of the
25 circulatory system restrains the exit of such large species at most sites. They can exit only in places where large openings or pores exist in the capillary endothelium, such as the sinusoids of the liver or spleen. Thus, these organs are the predominate site of uptake. On the other hand, SUVs show a broader tissue distribution but still are sequestered highly in the liver and spleen. In general, this *in vivo* behavior limits the
30 potential targeting of liposomes to only those organs and tissues accessible to their large size. These include the blood, liver, spleen, bone marrow, and lymphoid organs.

Targeting is generally not a limitation in terms of the present invention. However, should specific targeting be desired, methods are available for this to be accomplished. Antibodies may be used to bind to the liposome surface and to direct the antibody and its drug contents to specific antigenic receptors located on a particular cell-type surface. Carbohydrate determinants (glycoprotein or glycolipid cell-surface components that play a role in cell-cell recognition, interaction and adhesion) may also be used as recognition sites as they have potential in directing liposomes to particular cell types. Mostly, it is contemplated that intravenous injection of liposomal preparations would be used, but other routes of administration are also conceivable.

Alternatively, the invention provides for pharmaceutically-acceptable nanocapsule formulations of the compositions of the present invention. Nanocapsules can generally entrap compounds in a stable and reproducible way (Henry-Michelland *et al.*, 1987; Quintanar-Guerrero *et al.*, 1998; Douglas *et al.*, 1987). To avoid side effects due to intracellular polymeric overloading, such ultrafine particles (sized around 0.1 μm) should be designed using polymers able to be degraded *in vivo*. Biodegradable polyalkyl-cyanoacrylate nanoparticles that meet these requirements are contemplated for use in the present invention. Such particles may be easily made, as described (Couvreur *et al.*, 1980; 1988; zur Muhlen *et al.*, 1998; Zambaux *et al.* 1998; Pinto-Alphandry *et al.*, 1995 and U. S. Patent 5,145,684, specifically incorporated herein by reference in its entirety).

IMMUNOGENIC COMPOSITIONS

In certain preferred embodiments of the present invention, immunogenic compositions, or vaccines, are provided. The immunogenic compositions will generally comprise one or more pharmaceutical compositions, such as those discussed above, in combination with an immunostimulant. An immunostimulant may be any substance that enhances or potentiates an immune response (antibody and/or cell-mediated) to an exogenous antigen. Examples of immunostimulants include adjuvants, biodegradable microspheres (*e.g.*, polylactic galactide) and liposomes (into which the compound is incorporated; *see e.g.*, Fullerton, U.S. Patent No. 4,235,877). Vaccine preparation is generally described in, for example, M.F. Powell and M.J. Newman, eds., "Vaccine

Design (the subunit and adjuvant approach)," Plenum Press (NY, 1995).
Pharmaceutical compositions and immunogenic compositions, or vaccines, within the
scope of the present invention may also contain other compounds, which may be
biologically active or inactive. For example, one or more immunogenic portions of
5 other tumor antigens may be present, either incorporated into a fusion polypeptide or as
a separate compound, within the composition.

Illustrative immunogenic compositions may contain DNA encoding one
or more of the polypeptides as described above, such that the polypeptide is generated
in situ. As noted above, the DNA may be present within any of a variety of delivery
10 systems known to those of ordinary skill in the art, including nucleic acid expression
systems, bacteria and viral expression systems. Numerous gene delivery techniques are
well known in the art, such as those described by Rolland, *Crit. Rev. Therap. Drug
Carrier Systems* 15:143-198, 1998, and references cited therein. Appropriate nucleic
acid expression systems contain the necessary DNA sequences for expression in the
15 patient (such as a suitable promoter and terminating signal). Bacterial delivery systems
involve the administration of a bacterium (such as *Bacillus-Calmette-Guerrin*) that
expresses an immunogenic portion of the polypeptide on its cell surface or secretes such
an epitope. In a preferred embodiment, the DNA may be introduced using a viral
expression system (e.g., vaccinia or other pox virus, retrovirus, or adenovirus), which
20 may involve the use of a non-pathogenic (defective), replication competent virus.
Suitable systems are disclosed, for example, in Fisher-Hoch *et al.*, *Proc. Natl. Acad.
Sci. USA* 86:317-321, 1989; Flexner *et al.*, *Ann. N.Y. Acad. Sci.* 569:86-103, 1989;
Flexner *et al.*, *Vaccine* 8:17-21, 1990; U.S. Patent Nos. 4,603,112, 4,769,330, and
5,017,487; WO 89/01973; U.S. Patent No. 4,777,127; GB 2,200,651; EP 0,345,242;
25 WO 91/02805; Berkner, *Biotechniques* 6:616-627, 1988; Rosenfeld *et al.*, *Science*
252:431-434, 1991; Kolls *et al.*, *Proc. Natl. Acad. Sci. USA* 91:215-219, 1994;
Kass-Eisler *et al.*, *Proc. Natl. Acad. Sci. USA* 90:11498-11502, 1993; Guzman *et al.*,
Circulation 88:2838-2848, 1993; and Guzman *et al.*, *Cir. Res.* 73:1202-1207, 1993.
Techniques for incorporating DNA into such expression systems are well known to
30 those of ordinary skill in the art. The DNA may also be "naked," as described, for
example, in Ulmer *et al.*, *Science* 259:1745-1749, 1993 and reviewed by Cohen,

Science 259:1691-1692, 1993. The uptake of naked DNA may be increased by coating the DNA onto biodegradable beads, which are efficiently transported into the cells. It will be apparent that an immunogenic composition may comprise both a polynucleotide and a polypeptide component. Such immunogenic compositions may provide for an enhanced immune response.

It will be apparent that an immunogenic composition may contain pharmaceutically acceptable salts of the polynucleotides and polypeptides provided herein. Such salts may be prepared from pharmaceutically acceptable non-toxic bases, including organic bases (*e.g.*, salts of primary, secondary and tertiary amines and basic amino acids) and inorganic bases (*e.g.*, sodium, potassium, lithium, ammonium, calcium and magnesium salts).

While any suitable carrier known to those of ordinary skill in the art may be employed in the immunogenic compositions of this invention, the type of carrier will vary depending on the mode of administration. Compositions of the present invention may be formulated for any appropriate manner of administration, including for example, topical, oral, nasal, intravenous, intracranial, intraperitoneal, subcutaneous or intramuscular administration. For parenteral administration, such as subcutaneous injection, the carrier preferably comprises water, saline, alcohol, a fat, a wax or a buffer. For oral administration, any of the above carriers or a solid carrier, such as mannitol, lactose, starch, magnesium stearate, sodium saccharine, talcum, cellulose, glucose, sucrose, and magnesium carbonate, may be employed. Biodegradable microspheres (*e.g.*, polylactate polyglycolate) may also be employed as carriers for the pharmaceutical compositions of this invention. Suitable biodegradable microspheres are disclosed, for example, in U.S. Patent Nos. 4,897,268; 5,075,109; 5,928,647; 5,811,128; 5,820,883; 5,853,763; 5,814,344 and 5,942,252. One may also employ a carrier comprising the particulate-protein complexes described in U.S. Patent No. 5,928,647, which are capable of inducing a class I-restricted cytotoxic T lymphocyte responses in a host.

Such compositions may also comprise buffers (*e.g.*, neutral buffered saline or phosphate buffered saline), carbohydrates (*e.g.*, glucose, mannose, sucrose or dextrans), mannitol, proteins, polypeptides or amino acids such as glycine, antioxidants,

bacteriostats, chelating agents such as EDTA or glutathione, adjuvants (*e.g.*, aluminum hydroxide), solutes that render the formulation isotonic, hypotonic or weakly hypertonic with the blood of a recipient, suspending agents, thickening agents and/or preservatives. Alternatively, compositions of the present invention may be formulated as a lyophilizate. Compounds may also be encapsulated within liposomes using well known technology.

Any of a variety of immunostimulants may be employed in the immunogenic compositions of this invention. For example, an adjuvant may be included. Most adjuvants contain a substance designed to protect the antigen from rapid catabolism, such as aluminum hydroxide or mineral oil, and a stimulator of immune responses, such as lipid A, *Bordetella pertussis* or *Mycobacterium tuberculosis* derived proteins. Suitable adjuvants are commercially available as, for example, Freund's Incomplete Adjuvant and Complete Adjuvant (Difco Laboratories, Detroit, MI); Merck Adjuvant 65 (Merck and Company, Inc., Rahway, NJ); AS-2 (SmithKline Beecham, Philadelphia, PA); aluminum salts such as aluminum hydroxide gel (alum) or aluminum phosphate; salts of calcium, iron or zinc; an insoluble suspension of acylated tyrosine; acylated sugars; cationically or anionically derivatized polysaccharides; polyphosphazenes; biodegradable microspheres; monophosphoryl lipid A and quil A. Cytokines, such as GM-CSF or interleukin-2, -7, or -12, may also be used as adjuvants.

Within the immunogenic compositions provided herein, the adjuvant composition is preferably designed to induce an immune response predominantly of the Th1 type. High levels of Th1-type cytokines (*e.g.*, IFN- γ , TNF α , IL-2 and IL-12) tend to favor the induction of cell mediated immune responses to an administered antigen. In contrast, high levels of Th2-type cytokines (*e.g.*, IL-4, IL-5, IL-6 and IL-10) tend to favor the induction of humoral immune responses. Following application of an immunogenic composition as provided herein, a patient will support an immune response that includes Th1- and Th2-type responses. Within a preferred embodiment, in which a response is predominantly Th1-type, the level of Th1-type cytokines will increase to a greater extent than the level of Th2-type cytokines. The levels of these cytokines may be readily assessed using standard assays. For a review of the families of cytokines, see Mosmann and Coffman, *Ann. Rev. Immunol.* 7:145-173, 1989.

Preferred adjuvants for use in eliciting a predominantly Th1-type response include, for example, a combination of monophosphoryl lipid A, preferably 3-de-O-acylated monophosphoryl lipid A (3D-MPL), together with an aluminum salt. MPL adjuvants are available from Corixa Corporation (Seattle, WA; *see* US Patent
5 Nos. 4,436,727; 4,877,611; 4,866,034 and 4,912,094). CpG-containing oligonucleotides (in which the CpG dinucleotide is unmethylated) also induce a predominantly Th1 response. Such oligonucleotides are well known and are described, for example, in WO 96/02555, WO 99/33488 and U.S. Patent Nos. 6,008,200 and 5,856,462. Immunostimulatory DNA sequences are also described, for example, by
10 Sato *et al.*, *Science* 273:352, 1996. Another preferred adjuvant is a saponin, preferably QS21 (Aquila Biopharmaceuticals Inc., Framingham, MA), which may be used alone or in combination with other adjuvants. For example, an enhanced system involves the combination of a monophosphoryl lipid A and saponin derivative, such as the combination of QS21 and 3D-MPL as described in WO 94/00153, or a less reactogenic
15 composition where the QS21 is quenched with cholesterol, as described in WO 96/33739. Other preferred formulations comprise an oil-in-water emulsion and tocopherol. A particularly potent adjuvant formulation involving QS21, 3D-MPL and tocopherol in an oil-in-water emulsion is described in WO 95/17210.

Other preferred adjuvants include Montanide ISA 720 (Seppic, France),
20 SAF (Chiron, California, United States), ISCOMS (CSL), MF-59 (Chiron), the SBAS series of adjuvants (*e.g.*, SBAS-2 or SBAS-4, available from SmithKline Beecham, Rixensart, Belgium), Detox (Corixa, Hamilton, MT), RC-529 (Corixa, Hamilton, MT) and other aminoalkyl glucosaminide 4-phosphates (AGPs), such as those described in pending U.S. Patent Application Serial Nos. 08/853,826 and 09/074,720, the disclosures
25 of which are incorporated herein by reference in their entireties.

Any immunogenic composition provided herein may be prepared using well known methods that result in a combination of antigen, immune response enhancer and a suitable carrier or excipient. The compositions described herein may be administered as part of a sustained release formulation (*i.e.*, a formulation such as a
30 capsule, sponge or gel (composed of polysaccharides, for example) that effects a slow release of compound following administration). Such formulations may generally be

prepared using well known technology (*see, e.g., Coombes et al., Vaccine 14:1429-1438, 1996*) and administered by, for example, oral, rectal or subcutaneous implantation, or by implantation at the desired target site. Sustained-release formulations may contain a polypeptide, polynucleotide or antibody dispersed in a carrier matrix and/or contained within a reservoir surrounded by a rate controlling membrane.

Carriers for use within such formulations are biocompatible, and may also be biodegradable; preferably the formulation provides a relatively constant level of active component release. Such carriers include microparticles of poly(lactide-co-glycolide), polyacrylate, latex, starch, cellulose, dextran and the like. Other delayed-release carriers include supramolecular biovectors, which comprise a non-liquid hydrophilic core (*e.g., a cross-linked polysaccharide or oligosaccharide*) and, optionally, an external layer comprising an amphiphilic compound, such as a phospholipid (*see e.g., U.S. Patent No. 5,151,254 and PCT applications WO 94/20078, WO/94/23701 and WO 96/06638*). The amount of active compound contained within a sustained release formulation depends upon the site of implantation, the rate and expected duration of release and the nature of the condition to be treated or prevented.

Any of a variety of delivery vehicles may be employed within pharmaceutical compositions and immunogenic compositions to facilitate production of an antigen-specific immune response that targets tumor cells. Delivery vehicles include antigen presenting cells (APCs), such as dendritic cells, macrophages, B cells, monocytes and other cells that may be engineered to be efficient APCs. Such cells may, but need not, be genetically modified to increase the capacity for presenting the antigen, to improve activation and/or maintenance of the T cell response, to have anti-tumor effects *per se* and/or to be immunologically compatible with the receiver (*i.e., matched HLA haplotype*). APCs may generally be isolated from any of a variety of biological fluids and organs, including tumor and peritumoral tissues, and may be autologous, allogeneic, syngeneic or xenogeneic cells.

Certain preferred embodiments of the present invention use dendritic cells or progenitors thereof as antigen-presenting cells. Dendritic cells are highly potent APCs (Banchereau and Steinman, *Nature 392:245-251, 1998*) and have been shown to

be effective as a physiological adjuvant for eliciting prophylactic or therapeutic antitumor immunity (*see* Timmerman and Levy, *Ann. Rev. Med.* 50:507-529, 1999). In general, dendritic cells may be identified based on their typical shape (stellate *in situ*, with marked cytoplasmic processes (dendrites) visible *in vitro*), their ability to take up, process and present antigens with high efficiency and their ability to activate naïve T cell responses. Dendritic cells may, of course, be engineered to express specific cell-surface receptors or ligands that are not commonly found on dendritic cells *in vivo* or *ex vivo*, and such modified dendritic cells are contemplated by the present invention. As an alternative to dendritic cells, secreted vesicles antigen-loaded dendritic cells (called exosomes) may be used within a vaccine, or immunogenic composition (*see* Zitvogel *et al.*, *Nature Med.* 4:594-600, 1998).

Dendritic cells and progenitors may be obtained from peripheral blood, bone marrow, tumor-infiltrating cells, peritumoral tissues-infiltrating cells, lymph nodes, spleen, skin, umbilical cord blood or any other suitable tissue or fluid. For example, dendritic cells may be differentiated *ex vivo* by adding a combination of cytokines such as GM-CSF, IL-4, IL-13 and/or TNF α to cultures of monocytes harvested from peripheral blood. Alternatively, CD34 positive cells harvested from peripheral blood, umbilical cord blood or bone marrow may be differentiated into dendritic cells by adding to the culture medium combinations of GM-CSF, IL-3, TNF α , CD40 ligand, LPS, flt3 ligand and/or other compound(s) that induce differentiation, maturation and proliferation of dendritic cells.

Dendritic cells are conveniently categorized as "immature" and "mature" cells, which allows a simple way to discriminate between two well characterized phenotypes. However, this nomenclature should not be construed to exclude all possible intermediate stages of differentiation. Immature dendritic cells are characterized as APC with a high capacity for antigen uptake and processing, which correlates with the high expression of Fc γ receptor and mannose receptor. The mature phenotype is typically characterized by a lower expression of these markers, but a high expression of cell surface molecules responsible for T cell activation such as class I and class II MHC, adhesion molecules (*e.g.*, CD54 and CD11) and costimulatory molecules (*e.g.*, CD40, CD80, CD86 and 4-1BB).

APCs may generally be transfected with a polynucleotide encoding a lung tumor protein (or portion or other variant thereof) such that the lung tumor polypeptide, or an immunogenic portion thereof, is expressed on the cell surface. Such transfection may take place *ex vivo*, and a composition comprising such transfected
5 cells may then be used for therapeutic purposes, as described herein. Alternatively, a gene delivery vehicle that targets a dendritic or other antigen presenting cell may be administered to a patient, resulting in transfection that occurs *in vivo*. *In vivo* and *ex vivo* transfection of dendritic cells, for example, may generally be performed using any methods known in the art, such as those described in WO 97/24447, or the gene gun
10 approach described by Mahvi *et al.*, *Immunology and cell Biology* 75:456-460, 1997. Antigen loading of dendritic cells may be achieved by incubating dendritic cells or progenitor cells with the lung tumor polypeptide, DNA (naked or within a plasmid vector) or RNA; or with antigen-expressing recombinant bacterium or viruses (*e.g.*, vaccinia, fowlpox, adenovirus or lentivirus vectors). Prior to loading, the polypeptide
15 may be covalently conjugated to an immunological partner that provides T cell help (*e.g.*, a carrier molecule). Alternatively, a dendritic cell may be pulsed with a non-conjugated immunological partner, separately or in the presence of the polypeptide.

Immunogenic compositions and pharmaceutical compositions may be presented in unit-dose or multi-dose containers, such as sealed ampoules or vials. Such
20 containers are preferably hermetically sealed to preserve sterility of the formulation until use. In general, formulations may be stored as suspensions, solutions or emulsions in oily or aqueous vehicles. Alternatively, an immunogenic or pharmaceutical composition may be stored in a freeze-dried condition requiring only the addition of a sterile liquid carrier immediately prior to use.

25 CANCER THERAPY

In further aspects of the present invention, the compositions described herein may be used for immunotherapy of cancer, such as lung cancer. Within such methods, compositions are typically administered to a patient. As used herein, a "patient" refers to any warm-blooded animal, preferably a human. A patient may or
30 may not be afflicted with cancer. Accordingly, the above pharmaceutical compositions

and immunogenic compositions may be used to prevent the development of a cancer or to treat a patient afflicted with a cancer. A cancer may be diagnosed using criteria generally accepted in the art, including the presence of a malignant tumor. Pharmaceutical compositions and immunogenic compositions may be administered
5 either prior to or following surgical removal of primary tumors and/or treatment such as administration of radiotherapy or conventional chemotherapeutic drugs. Administration may be by any suitable method, including administration by intravenous, intraperitoneal, intramuscular, subcutaneous, intranasal, intradermal, anal, vaginal, topical and oral routes.

10 Within certain embodiments, immunotherapy may be active immunotherapy, in which treatment relies on the *in vivo* stimulation of the endogenous host immune system to react against tumors with the administration of immune response-modifying agents (such as polypeptides and polynucleotides as provided herein).

15 Within other embodiments, immunotherapy may be passive immunotherapy, in which treatment involves the delivery of agents with established tumor-immune reactivity (such as effector cells or antibodies) that can directly or indirectly mediate antitumor effects and does not necessarily depend on an intact host immune system. Examples of effector cells include T cells as discussed above, T
20 lymphocytes (such as CD8⁺ cytotoxic T lymphocytes and CD4⁺ T-helper tumor-infiltrating lymphocytes), killer cells (such as Natural Killer cells and lymphokine-activated killer cells), B cells and antigen-presenting cells (such as dendritic cells and macrophages) expressing a polypeptide provided herein. T cell receptors and antibody receptors specific for the polypeptides recited herein may be cloned, expressed and
25 transferred into other vectors or effector cells for adoptive immunotherapy. The polypeptides provided herein may also be used to generate antibodies or anti-idiotypic antibodies (as described above and in U.S. Patent No. 4,918,164) for passive immunotherapy.

Effector cells may generally be obtained in sufficient quantities for
30 adoptive immunotherapy by growth *in vitro*, as described herein. Culture conditions for expanding single antigen-specific effector cells to several billion in number with

retention of antigen recognition *in vivo* are well known in the art. Such *in vitro* culture conditions typically use intermittent stimulation with antigen, often in the presence of cytokines (such as IL-2) and non-dividing feeder cells. As noted above, immunoreactive polypeptides as provided herein may be used to rapidly expand
5 antigen-specific T cell cultures in order to generate a sufficient number of cells for immunotherapy. In particular, antigen-presenting cells, such as dendritic, macrophage, monocyte, fibroblast and/or B cells, may be pulsed with immunoreactive polypeptides or transfected with one or more polynucleotides using standard techniques well known in the art. For example, antigen-presenting cells can be transfected with a
10 polynucleotide having a promoter appropriate for increasing expression in a recombinant virus or other expression system. Cultured effector cells for use in therapy must be able to grow and distribute widely, and to survive long term *in vivo*. Studies have shown that cultured effector cells can be induced to grow *in vivo* and to survive long term in substantial numbers by repeated stimulation with antigen supplemented
15 with IL-2 (*see, for example, Cheever et al., Immunological Reviews 157:177, 1997*).

Alternatively, a vector expressing a polypeptide recited herein may be introduced into antigen presenting cells taken from a patient and clonally propagated *ex vivo* for transplant back into the same patient. Transfected cells may be reintroduced into the patient using any means known in the art, preferably in sterile form by
20 intravenous, intracavitary, intraperitoneal or intratumor administration.

Routes and frequency of administration of the therapeutic compositions described herein, as well as dosage, will vary from individual to individual, and may be readily established using standard techniques. In general, the pharmaceutical compositions and immunogenic compositions may be administered by injection (*e.g.*,
25 intracutaneous, intramuscular, intravenous or subcutaneous), intranasally (*e.g.*, by aspiration) or orally. Preferably, between 1 and 10 doses may be administered over a 52 week period. Preferably, 6 doses are administered, at intervals of 1 month, and booster vaccinations may be given periodically thereafter. Alternate protocols may be appropriate for individual patients. A suitable dose is an amount of a compound that,
30 when administered as described above, is capable of promoting an anti-tumor immune response, and is at least 10-50% above the basal (*i.e.*, untreated) level. Such response

can be monitored by measuring the anti-tumor antibodies in a patient or by vaccine-dependent generation of cytolytic effector cells capable of killing the patient's tumor cells *in vitro*. Such vaccines, or immunogenic compositions, should also be capable of causing an immune response that leads to an improved clinical outcome (*e.g.*, more frequent remissions, complete or partial or longer disease-free survival) in vaccinated patients as compared to non-vaccinated patients. In general, for compositions comprising one or more polypeptides, the amount of each polypeptide present in a dose ranges from about 25 μ g to 5 mg per kg of host. Suitable dose sizes will vary with the size of the patient, but will typically range from about 0.1 mL to about 5 mL.

10 In general, an appropriate dosage and treatment regimen provides the active compound(s) in an amount sufficient to provide therapeutic and/or prophylactic benefit. Such a response can be monitored by establishing an improved clinical outcome (*e.g.*, more frequent remissions, complete or partial, or longer disease-free survival) in treated patients as compared to non-treated patients. Increases in preexisting immune responses to a lung tumor protein generally correlate with an improved clinical outcome. Such immune responses may generally be evaluated using standard proliferation, cytotoxicity or cytokine assays, which may be performed using samples obtained from a patient before and after treatment.

CANCER DETECTION AND DIAGNOSIS

20 In general, a cancer may be detected in a patient based on the presence of one or more lung tumor proteins and/or polynucleotides encoding such proteins in a biological sample (for example, blood, sera, sputum urine and/or tumor biopsies) obtained from the patient. In other words, such proteins may be used as markers to indicate the presence or absence of a cancer such as lung cancer. In addition, such proteins may be useful for the detection of other cancers. The binding agents provided herein generally permit detection of the level of antigen that binds to the agent in the biological sample. Polynucleotide primers and probes may be used to detect the level of mRNA encoding a tumor protein, which is also indicative of the presence or absence of a cancer. In general, a lung tumor sequence should be present at a level that is at least three fold higher in tumor tissue than in normal tissue

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There are a variety of assay formats known to those of ordinary skill in the art for using a binding agent to detect polypeptide markers in a sample. *See, e.g.,* Harlow and Lane, *Antibodies: A Laboratory Manual*, Cold Spring Harbor Laboratory, 1988. In general, the presence or absence of a cancer in a patient may be determined by

5 (a) contacting a biological sample obtained from a patient with a binding agent; (b) detecting in the sample a level of polypeptide that binds to the binding agent; and (c) comparing the level of polypeptide with a predetermined cut-off value.

In a preferred embodiment, the assay involves the use of binding agent immobilized on a solid support to bind to and remove the polypeptide from the

10 remainder of the sample. The bound polypeptide may then be detected using a detection reagent that contains a reporter group and specifically binds to the binding agent/polypeptide complex. Such detection reagents may comprise, for example, a binding agent that specifically binds to the polypeptide or an antibody or other agent that specifically binds to the binding agent, such as an anti-immunoglobulin, protein G,

15 protein A or a lectin. Alternatively, a competitive assay may be utilized, in which a polypeptide is labeled with a reporter group and allowed to bind to the immobilized binding agent after incubation of the binding agent with the sample. The extent to which components of the sample inhibit the binding of the labeled polypeptide to the binding agent is indicative of the reactivity of the sample with the immobilized binding

20 agent. Suitable polypeptides for use within such assays include full length lung tumor proteins and portions thereof to which the binding agent binds, as described above.

The solid support may be any material known to those of ordinary skill in the art to which the tumor protein may be attached. For example, the solid support may be a test well in a microtiter plate or a nitrocellulose or other suitable membrane.

25 Alternatively, the support may be a bead or disc, such as glass, fiberglass, latex or a plastic material such as polystyrene or polyvinylchloride. The support may also be a magnetic particle or a fiber optic sensor, such as those disclosed, for example, in U.S. Patent No. 5,359,681. The binding agent may be immobilized on the solid support using a variety of techniques known to those of skill in the art, which are amply

30 described in the patent and scientific literature. In the context of the present invention, the term "immobilization" refers to both noncovalent association, such as adsorption,

and covalent attachment (which may be a direct linkage between the agent and functional groups on the support or may be a linkage by way of a cross-linking agent). Immobilization by adsorption to a well in a microtiter plate or to a membrane is preferred. In such cases, adsorption may be achieved by contacting the binding agent, 5 in a suitable buffer, with the solid support for a suitable amount of time. The contact time varies with temperature, but is typically between about 1 hour and about 1 day. In general, contacting a well of a plastic microtiter plate (such as polystyrene or polyvinylchloride) with an amount of binding agent ranging from about 10 ng to about 10 µg, and preferably about 100 ng to about 1 µg, is sufficient to immobilize an 10 adequate amount of binding agent.

Covalent attachment of binding agent to a solid support may generally be achieved by first reacting the support with a bifunctional reagent that will react with both the support and a functional group, such as a hydroxyl or amino group, on the binding agent. For example, the binding agent may be covalently attached to supports 15 having an appropriate polymer coating using benzoquinone or by condensation of an aldehyde group on the support with an amine and an active hydrogen on the binding partner (*see, e.g.*, Pierce Immunotechnology Catalog and Handbook, 1991, at A12-A13).

In certain embodiments, the assay is a two-antibody sandwich assay. 20 This assay may be performed by first contacting an antibody that has been immobilized on a solid support, commonly the well of a microtiter plate, with the sample, such that polypeptides within the sample are allowed to bind to the immobilized antibody. Unbound sample is then removed from the immobilized polypeptide-antibody complexes and a detection reagent (preferably a second antibody capable of binding to 25 a different site on the polypeptide) containing a reporter group is added. The amount of detection reagent that remains bound to the solid support is then determined using a method appropriate for the specific reporter group.

More specifically, once the antibody is immobilized on the support as described above, the remaining protein binding sites on the support are typically 30 blocked. Any suitable blocking agent known to those of ordinary skill in the art, such as bovine serum albumin or Tween 20™ (Sigma Chemical Co., St. Louis, MO). The

immobilized antibody is then incubated with the sample, and polypeptide is allowed to bind to the antibody. The sample may be diluted with a suitable diluent, such as phosphate-buffered saline (PBS) prior to incubation. In general, an appropriate contact time (*i.e.*, incubation time) is a period of time that is sufficient to detect the presence of polypeptide within a sample obtained from an individual with lung cancer. Preferably, the contact time is sufficient to achieve a level of binding that is at least about 95% of that achieved at equilibrium between bound and unbound polypeptide. Those of ordinary skill in the art will recognize that the time necessary to achieve equilibrium may be readily determined by assaying the level of binding that occurs over a period of time. At room temperature, an incubation time of about 30 minutes is generally sufficient.

Unbound sample may then be removed by washing the solid support with an appropriate buffer, such as PBS containing 0.1% Tween 20™. The second antibody, which contains a reporter group, may then be added to the solid support. Preferred reporter groups include those groups recited above.

The detection reagent is then incubated with the immobilized antibody-polypeptide complex for an amount of time sufficient to detect the bound polypeptide. An appropriate amount of time may generally be determined by assaying the level of binding that occurs over a period of time. Unbound detection reagent is then removed and bound detection reagent is detected using the reporter group. The method employed for detecting the reporter group depends upon the nature of the reporter group. For radioactive groups, scintillation counting or autoradiographic methods are generally appropriate. Spectroscopic methods may be used to detect dyes, luminescent groups and fluorescent groups. Biotin may be detected using avidin, coupled to a different reporter group (commonly a radioactive or fluorescent group or an enzyme). Enzyme reporter groups may generally be detected by the addition of substrate (generally for a specific period of time), followed by spectroscopic or other analysis of the reaction products.

To determine the presence or absence of a cancer, such as lung cancer, the signal detected from the reporter group that remains bound to the solid support is generally compared to a signal that corresponds to a predetermined cut-off value. In

one preferred embodiment, the cut-off value for the detection of a cancer is the average mean signal obtained when the immobilized antibody is incubated with samples from patients without the cancer. In general, a sample generating a signal that is three standard deviations above the predetermined cut-off value is considered positive for the cancer. In an alternate preferred embodiment, the cut-off value is determined using a Receiver Operator Curve, according to the method of Sackett *et al.*, *Clinical Epidemiology: A Basic Science for Clinical Medicine*, Little Brown and Co., 1985, p. 106-7. Briefly, in this embodiment, the cut-off value may be determined from a plot of pairs of true positive rates (*i.e.*, sensitivity) and false positive rates (100%-specificity) that correspond to each possible cut-off value for the diagnostic test result. The cut-off value on the plot that is the closest to the upper left-hand corner (*i.e.*, the value that encloses the largest area) is the most accurate cut-off value, and a sample generating a signal that is higher than the cut-off value determined by this method may be considered positive. Alternatively, the cut-off value may be shifted to the left along the plot, to minimize the false positive rate, or to the right, to minimize the false negative rate. In general, a sample generating a signal that is higher than the cut-off value determined by this method is considered positive for a cancer.

In a related embodiment, the assay is performed in a flow-through or strip test format, wherein the binding agent is immobilized on a membrane, such as nitrocellulose. In the flow-through test, polypeptides within the sample bind to the immobilized binding agent as the sample passes through the membrane. A second, labeled binding agent then binds to the binding agent-polypeptide complex as a solution containing the second binding agent flows through the membrane. The detection of bound second binding agent may then be performed as described above. In the strip test format, one end of the membrane to which binding agent is bound is immersed in a solution containing the sample. The sample migrates along the membrane through a region containing second binding agent and to the area of immobilized binding agent. Concentration of second binding agent at the area of immobilized antibody indicates the presence of a cancer. Typically, the concentration of second binding agent at that site generates a pattern, such as a line, that can be read visually. The absence of such a pattern indicates a negative result. In general, the amount of binding agent immobilized

on the membrane is selected to generate a visually discernible pattern when the biological sample contains a level of polypeptide that would be sufficient to generate a positive signal in the two-antibody sandwich assay, in the format discussed above. Preferred binding agents for use in such assays are antibodies and antigen-binding
5 fragments thereof. Preferably, the amount of antibody immobilized on the membrane ranges from about 25 ng to about 1 µg, and more preferably from about 50 ng to about 500 ng. Such tests can typically be performed with a very small amount of biological sample.

Of course, numerous other assay protocols exist that are suitable for use
10 with the tumor proteins or binding agents of the present invention. The above descriptions are intended to be exemplary only. For example, it will be apparent to those of ordinary skill in the art that the above protocols may be readily modified to use lung tumor polypeptides to detect antibodies that bind to such polypeptides in a biological sample. The detection of such lung tumor protein specific antibodies may
15 correlate with the presence of a cancer.

A cancer may also, or alternatively, be detected based on the presence of T cells that specifically react with a lung tumor protein in a biological sample. Within certain methods, a biological sample comprising CD4⁺ and/or CD8⁺ T cells isolated from a patient is incubated with a lung tumor polypeptide, a polynucleotide encoding
20 such a polypeptide and/or an APC that expresses at least an immunogenic portion of such a polypeptide, and the presence or absence of specific activation of the T cells is detected. Suitable biological samples include, but are not limited to, isolated T cells. For example, T cells may be isolated from a patient by routine techniques (such as by Ficoll/Hypaque density gradient centrifugation of peripheral blood lymphocytes). T
25 cells may be incubated *in vitro* for 2-9 days (typically 4 days) at 37°C with polypeptide (e.g., 5 - 25 µg/ml). It may be desirable to incubate another aliquot of a T cell sample in the absence of lung tumor polypeptide to serve as a control. For CD4⁺ T cells, activation is preferably detected by evaluating proliferation of the T cells. For CD8⁺ T cells, activation is preferably detected by evaluating cytolytic activity. A level of
30 proliferation that is at least two fold greater and/or a level of cytolytic activity that is at

least 20% greater than in disease-free patients indicates the presence of a cancer in the patient.

As noted above, a cancer may also, or alternatively, be detected based on the level of mRNA encoding a lung tumor protein in a biological sample. For example, at least two oligonucleotide primers may be employed in a polymerase chain reaction (PCR) based assay to amplify a portion of a lung tumor cDNA derived from a biological sample, wherein at least one of the oligonucleotide primers is specific for (*i.e.*, hybridizes to) a polynucleotide encoding the lung tumor protein. The amplified cDNA is then separated and detected using techniques well known in the art, such as gel electrophoresis. Similarly, oligonucleotide probes that specifically hybridize to a polynucleotide encoding a lung tumor protein may be used in a hybridization assay to detect the presence of polynucleotide encoding the tumor protein in a biological sample.

To permit hybridization under assay conditions, oligonucleotide primers and probes should comprise an oligonucleotide sequence that has at least about 60%, preferably at least about 75% and more preferably at least about 90%, identity to a portion of a polynucleotide encoding a lung tumor protein that is at least 10 nucleotides, and preferably, at least 20 nucleotides, in length. Preferably, oligonucleotide primers and/or probes hybridize to a polynucleotide encoding a polypeptide described herein under moderately stringent conditions, as defined above. Oligonucleotide primers and/or probes which may be usefully employed in the diagnostic methods described herein preferably are at least 10-40 nucleotides in length. In a preferred embodiment, the oligonucleotide primers comprise at least 10 contiguous nucleotides, more preferably at least 15 contiguous nucleotides, of a DNA molecule having a sequence recited in SEQ ID NO: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 or 810-826. Techniques for both PCR based assays and hybridization assays

are well known in the art (*see, for example, Mullis et al., Cold Spring Harbor Symp. Quant. Biol., 51:263, 1987; Erlich ed., PCR Technology, Stockton Press, NY, 1989*).

One preferred assay employs RT-PCR, in which PCR is applied in conjunction with reverse transcription. Typically, RNA is extracted from a biological sample, such as biopsy tissue, and is reverse transcribed to produce cDNA molecules. PCR amplification using at least one specific primer generates a cDNA molecule, which may be separated and visualized using, for example, gel electrophoresis. Amplification may be performed on biological samples taken from a test patient and from an individual who is not afflicted with a cancer. The amplification reaction may be performed on several dilutions of cDNA spanning two orders of magnitude. A two-fold or greater increase in expression in several dilutions of the test patient sample as compared to the same dilutions of the non-cancerous sample is typically considered positive.

In another embodiment, the compositions described herein may be used as markers for the progression of cancer. In this embodiment, assays as described above for the diagnosis of a cancer may be performed over time, and the change in the level of reactive polypeptide(s) or polynucleotide(s) evaluated. For example, the assays may be performed every 24-72 hours for a period of 6 months to 1 year, and thereafter performed as needed. In general, a cancer is progressing in those patients in whom the level of polypeptide or polynucleotide detected increases over time. In contrast, the cancer is not progressing when the level of reactive polypeptide or polynucleotide either remains constant or decreases with time.

Certain *in vivo* diagnostic assays may be performed directly on a tumor. One such assay involves contacting tumor cells with a binding agent. The bound binding agent may then be detected directly or indirectly via a reporter group. Such binding agents may also be used in histological applications. Alternatively, polynucleotide probes may be used within such applications.

As noted above, to improve sensitivity, multiple lung tumor protein markers may be assayed within a given sample. It will be apparent that binding agents specific for different proteins provided herein may be combined within a single assay. Further, multiple primers or probes may be used concurrently. The selection of tumor

protein markers may be based on routine experiments to determine combinations that results in optimal sensitivity. In addition, or alternatively, assays for tumor proteins provided herein may be combined with assays for other known tumor antigens.

DIAGNOSTIC KITS

5 The present invention further provides kits for use within any of the above diagnostic methods. Such kits typically comprise two or more components necessary for performing a diagnostic assay. Components may be compounds, reagents, containers and/or equipment. For example, one container within a kit may contain a monoclonal antibody or fragment thereof that specifically binds to a lung
10 tumor protein. Such antibodies or fragments may be provided attached to a support material, as described above. One or more additional containers may enclose elements, such as reagents or buffers, to be used in the assay. Such kits may also, or alternatively, contain a detection reagent as described above that contains a reporter group suitable for direct or indirect detection of antibody binding.

15 Alternatively, a kit may be designed to detect the level of mRNA encoding a lung tumor protein in a biological sample. Such kits generally comprise at least one oligonucleotide probe or primer, as described above, that hybridizes to a polynucleotide encoding a lung tumor protein. Such an oligonucleotide may be used, for example, within a PCR or hybridization assay. Additional components that may be
20 present within such kits include a second oligonucleotide and/or a diagnostic reagent or container to facilitate the detection of a polynucleotide encoding a lung tumor protein.

The following Examples are offered by way of illustration and not by way of limitation.

EXAMPLE 1IDENTIFICATION AND CHARACTERIZATION OF LUNG
TUMOR PROTEIN cDNAS

5 This Example illustrates the identification of cDNA molecules encoding lung tumor proteins.

A. Isolation of cDNA Sequences from Lung Adenocarcinoma Libraries
using Conventional cDNA Library Subtraction

 A human lung adenocarcinoma cDNA expression library was
10 constructed from poly A⁺ RNA from patient tissues (# 40031486) using a Superscript
Plasmid System for cDNA Synthesis and Plasmid Cloning kit (BRL Life Technologies,
Gaithersburg, MD) following the manufacturer's protocol. Specifically, lung carcinoma
tissues were homogenized with polytron (Kinematica, Switzerland) and total RNA was
extracted using Trizol reagent (BRL Life Technologies) as directed by the
15 manufacturer. The poly A⁺ RNA was then purified using an oligo dT cellulose column
as described in Sambrook et al., *Molecular Cloning: A Laboratory Manual*, Cold
Spring Harbor Laboratories, Cold Spring Harbor, NY, 1989. First-strand cDNA was
synthesized using the NotI/Oligo-dT18 primer. Double-stranded cDNA was
synthesized, ligated with BstXI/EcoRI adaptors (Invitrogen, San Diego, CA) and
20 digested with NotI. Following size fractionation with cDNA size fractionation columns
(BRL Life Technologies), the cDNA was ligated into the BstXI/NotI site of pcDNA3.1
(Invitrogen) and transformed into ElectroMax *E. coli* DH10B cells (BRL Life
Technologies) by electroporation. A total of 3 x 10⁶ independent colonies were
generated.

25 Using the same procedure, a normal human cDNA expression library
was prepared from a panel of normal tissue specimens, including lung, liver, pancreas,
skin, kidney, brain and resting PBMC.

 cDNA library subtraction was performed using the above lung
adenocarcinoma and normal tissue cDNA libraries, as described by Hara *et al.* (*Blood*,
30 84:189-199, 1994) with some modifications. Specifically, a lung adenocarcinoma-

specific subtracted cDNA library was generated as follows. The normal tissue cDNA library (80 µg) was digested with BamHI and XhoI, followed by a filling-in reaction with DNA polymerase Klenow fragment. After phenol-chloroform extraction and ethanol precipitation, the DNA was dissolved in 133 µl of H₂O, heat-denatured and
5 mixed with 133 µl (133 µg) of Photoprobe biotin (Vector Laboratories, Burlingame, CA). As recommended by the manufacturer, the resulting mixture was irradiated with a 270 W sunlamp on ice for 20 minutes. Additional Photoprobe biotin (67 µl) was added and the biotinylation reaction was repeated. After extraction with butanol five times, the DNA was ethanol-precipitated and dissolved in 23 µl H₂O. The resulting DNA,
10 plus other highly redundant cDNA clones that were frequently recovered in previous lung subtractions formed the driver DNA.

To form the tracer DNA, 10 µg lung adenocarcinoma cDNA library was digested with NotI and SpeI, phenol chloroform extracted and passed through Chroma spin-400 columns (Clontech, Palo Alto, CA). Typically, 5 µg of cDNA was recovered
15 after the sizing column. Following ethanol precipitation, the tracer DNA was dissolved in 5 µl H₂O. Tracer DNA was mixed with 15 µl driver DNA and 20 µl of 2 x hybridization buffer (1.5 M NaCl/10 mM EDTA/50 mM HEPES pH 7.5/0.2% sodium dodecyl sulfate), overlaid with mineral oil, and heat-denatured completely. The sample was immediately transferred into a 68 °C water bath and incubated for 20 hours (long
20 hybridization [LH]). The reaction mixture was then subjected to a streptavidin treatment followed by phenol/chloroform extraction. This process was repeated three more times. Subtracted DNA was precipitated, dissolved in 12 µl H₂O, mixed with 8 µl driver DNA and 20 µl of 2 x hybridization buffer, and subjected to a hybridization at 68 °C for 2 hours (short hybridization [SH]). After removal of biotinylated double-
25 stranded DNA, subtracted cDNA was ligated into NotI/SpeI site of chloramphenicol resistant pBCSK⁺ (Stratagene, La Jolla, CA) and transformed into ElectroMax *E. coli* DH10B cells by electroporation to generate a lung adenocarcinoma specific subtracted cDNA library, referred to as LAT-S1. Similarly, LAT-S2 was generated by including
23 genes that were over-expressed in the tracer as additional drivers.

30 A second human lung adenocarcinoma cDNA expression library was constructed using adenocarcinoma tissue from a second patient (# 86-66) and used to

prepare a second lung adenocarcinoma-specific subtracted cDNA library (referred to as LAT2-S2), as described above, using the same panel of normal tissues and the additional genes over-expressed in LAT-S1.

5 A third human metastatic lung adenocarcinoma library was constructed from a pool of two lung pleural effusions with lung and gastric adenocarcinoma origins. The subtracted cDNA library, Mets-sub2 was generated as described above using the same panel of normal tissues. However, the Mets-sub3 subtracted library was constructed by including 51 additional genes as drivers. These 51 genes were recovered in Mets-sub2, representing over-expressed housekeeping genes in the testers. As a
10 result, Mets-sub3 is more complexed and normalized.

A total of 16 cDNA fragments isolated from LAT-S1, 585 cDNA fragments isolated from LAT-S2, 568 cDNA clones from LAT2-S2, 15 cDNA clones from Mets-sub2 and 343 cDNA clones from Mets-sub3, described above, were colony PCR amplified and their mRNA expression levels in lung tumor, normal lung, and
15 various other normal and tumor tissues were determined using microarray technology (Incyte, Palo Alto, CA). Briefly, the PCR amplification products were dotted onto slides in an array format, with each product occupying a unique location in the array. mRNA was extracted from the tissue sample to be tested, reverse transcribed, and fluorescent-labeled cDNA probes were generated. The microarrays were probed with
20 the labeled cDNA probes, the slides scanned and fluorescence intensity was measured. This intensity correlates with the hybridization intensity. Seventy-three non-redundant cDNA clones, of which 42 were found to be unique, showed over-expression in lung tumors, with expression in normal tissues tested (lung, skin, lymph node, colon, liver, pancreas, breast, heart, bone marrow, large intestine, kidney, stomach, brain, small
25 intestine, bladder and salivary gland) being either undetectable, or at significantly lower levels compared to lung adenocarcinoma tumors. These clones were further characterized by DNA sequencing with a Perkin Elmer/Applied Biosystems Division Automated Sequencer Model 373A and/or Model 377 (Foster City, CA).

The sequences were compared to known sequences in the gene bank
30 using the EMBL GenBank databases (release 96). No significant homologies were found to the sequence provided in SEQ ID NO: 67, with no apparent homology to

previously identified expressed sequence tags (ESTs). The sequences of SEQ ID NO: 60, 62, 65, 66, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97 and 98 were found to show some homology to previously identified expressed sequence tags (ESTs). The cDNA sequences of SEQ ID NO: 59, 61, 63, 64, 67, 68, 72, 73, 75, 77, 78, 81-83, 85, 87, 88, 93, 94, 96, 99 and 100 showed homology to previously identified genes. The full-length cDNA sequences for the clones of SEQ ID NO: 96 and 100 are provided in SEQ ID NO: 316 and 318, respectively. The amino acid sequences for the clones of SEQ ID NO: 59, 61, 63, 64, 68, 73, 82, 83, 94, 96 and 100 are provided in SEQ ID NO: 331, 328, 329, 332, 327, 333, 330, 326, 325, 324 and 335, respectively. A predicted amino acid sequence encoded by the sequence of SEQ ID NO: 69 (referred to as L552S) is provided in SEQ ID NO: 786.

Further studies led to the isolation of an extended cDNA sequence, and open reading frame, for L552S (SEQ ID NO: 790). The predicted amino acid sequence encoded by the cDNA sequence of SEQ ID NO: 790 is provided in SEQ ID NO: 791. The determined cDNA sequence of an isoform of L552S is provided in SEQ ID NO: 792, with the corresponding predicted amino acid sequence being provided in SEQ ID NO: 793. Subsequent studies led to the isolation of the full-length cDNA sequence of L552S (SEQ ID NO: 808). The corresponding amino acid sequence is provided in SEQ ID NO: 809. No homologies were found to the protein sequence of L552S. However, nucleotides 533-769 of the full-length cDNA sequence were found to show homology to a previously identified DNA sequence.

Full-length cloning efforts on L552S led to the isolation of three additional cDNA sequences (SEQ ID NO: 810-812) from a metastatic lung adenocarcinoma library. The sequence of SEQ ID NO: 810 was found to show some homology to previously identified human DNA sequences. The sequence of SEQ ID NO: 811 was found to show some homology to a previously identified DNA sequence. The sequence of SEQ ID NO: 812 was found to show some homology to previously identified ESTs.

The gene of SEQ ID NO: 84 (referred to as L551S) was determined by real-time RT-PCR analysis to be over-expressed in 2/9 primary adenocarcinomas and to be expressed at lower levels in 2/2 metastatic adenocarcinomas and 1/2 squamous cell

carcinomas. No expression was observed in normal tissues, with the exception of very low expression in normal stomach. Further studies on L551S led to the isolation of the 5' and 3' cDNA consensus sequences provided in SEQ ID NO: 801 and 802, respectively. The L551S 5' sequence was found to show some homology to the previously identified gene STY8 (cDNA sequence provided in SEQ ID NO: 803; corresponding amino acid sequence provided in SEQ ID NO: 805), which is a mitogen activated protein kinase phosphatase. However, no significant homologies were found to the 3' sequence of L551S. Subsequently, an extended cDNA sequence for L551S was isolated (SEQ ID NO: 804). The corresponding amino acid sequence is provided in SEQ ID NO: 806. Further studies led to the isolation of two independent full-length clones for L551S (referred to as 54298 and 54305). These two clones have five nucleotide differences compared to the STY8 DNA sequence. Two of these differences are single nucleotide polymorphisms which do not effect the encoded amino acid sequences. The other three nucleotide differences are consistent between the two L551S clones but lead to encoded amino acid sequences that are different from the STY8 protein sequence. The determined cDNA sequences for the L551S full-length clones 54305 and 54298 are provided in SEQ ID NO: 825 and 826, respectively, with the amino acid sequence for L551S being provided in SEQ ID NO: 827.

B. Isolation of cDNA Sequences from Lung Adenocarcinoma Libraries using PCR-Based cDNA Library Subtraction

cDNA clones from a PCR-based subtraction library, containing cDNA from a pool of two human lung primary adenocarcinomas subtracted against a pool of nine normal human tissue cDNAs including skin, colon, lung, esophagus, brain, kidney, spleen, pancreas and liver, (Clontech, Palo Alto, CA) were derived and submitted to a first round of PCR amplification. This library (referred to as ALT-1) was subjected to a second round of PCR amplification, following the manufacturer's protocol. The expression levels of 760 cDNA clones in lung tumor, normal lung, and various other normal and tumor tissues, were examined using microarray technology as described above. A total of 118 clones, of which 55 were unique, were found to be over-expressed in lung tumor tissue, with expression in normal tissues tested (lung, skin,

lymph node, colon, liver, pancreas, breast, heart, bone marrow, large intestine, kidney, stomach, brain, small intestine, bladder and salivary gland) being either undetectable, or at significantly lower levels. The sequences were compared to known sequences in the gene bank using the EMBL and GenBank databases (release 96). No significant
5 homologies (including ESTs) were found to the sequence provided in SEQ ID NO: 44. The sequences of SEQ ID NO: 1, 11, 13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43, 45, 46, 51 and 57 were found to show some homology to previously identified expressed sequence tags (ESTs). The cDNA sequences of SEQ ID NO: 2-10, 12, 14, 16-19, 21, 22, 28, 31, 32, 35-38, 40, 42, 44, 47-50, 52-56 and 58 showed homology to previously
10 identified genes. The full-length cDNA sequences for the clones of SEQ ID NO: 18, 22, 31, 35, 36 and 42 are provided in SEQ ID NO: 320, 319, 323, 321, 317, 321 and 322, respectively, with the corresponding amino acid sequences being provided in SEQ ID NO: 337, 336, 340, 338, 334, and 339, respectively.

Further studies led to the isolation of an extended cDNA sequence for
15 the clone of SEQ ID NO: 33 (referred to as L801P). This extended cDNA sequence (provided in SEQ ID NO: 796), was found to contain three potential open reading frames (ORFs). The predicted amino acid sequences encoded by these three ORFs are provided in SEQ ID NO: 797-799, respectively.

In subsequent studies, a full-length cDNA sequence for the clone of SEQ
20 ID NO: 44 (referred to as L844P) was isolated (provided in SEQ ID NO: 800). Comparison of this sequence with those in the public databases revealed that the 470 bases at the 5' end of the sequence show homology to the known gene dihydrodiol dehydrogenase, thus indicating that L844P is a novel transcript of the dihydrodiol dehydrogenase family having 2007 base pairs of previously unidentified 3'
25 untranslated region.

The predicted amino acid sequence encoded by the sequence of SEQ ID NO: 46 (referred to as L840P) is provided in SEQ ID NO: 787. An extended cDNA sequence for L840P, which was determined to include an open reading frame, is provided in SEQ ID NO: 794. The predicted amino acid sequence encoded by the
30 cDNA sequence of SEQ ID NO: 794 is provided in SEQ ID NO: 795. The full-length cDNA sequence for the clone of SEQ ID NO: 54 (referred to as L548S) is provided in

SEQ ID NO: 788, with the corresponding amino acid sequence being provided in SEQ ID NO: 789.

Northern blot analyses of the genes of SEQ ID NO: 25 and 46 (referred to as L839P and L840P, respectively) were remarkably similar. Both genes were expressed in 1/2 lung adenocarcinomas as two bands of 3.6 kb and 1.6 kb. No expression of L839P was observed in normal lung or trachea. No expression of L840P was observed in normal bone marrow, resting or activated PBMC, esophagus, or normal lung. Given the similar expression patterns, L839P and L840P may be derived from the same gene.

Further studies on L773P (SEQ ID NO: 58) resulted in the isolation of the extended consensus cDNA sequence provided in SEQ ID NO: 807.

Additional lung adenocarcinoma cDNA clones were isolated as follows. A cDNA library was prepared from a pool of two lung adenocarcinomas and subtracted against cDNA from a panel of normal tissues including lung, brain, liver, kidney, pancreas, skin, heart and spleen. The subtraction was performed using a PCR-based protocol (Clontech), which was modified to generate larger fragments. Within this protocol, tester and driver double stranded cDNA were separately digested with five restriction enzymes that recognize six-nucleotide restriction sites (MluI, MscI, PvuII, Sall and StuI). This digestion resulted in an average cDNA size of 600 bp, rather than the average size of 300 bp that results from digestion with RsaI according to the Clontech protocol. The ends of the restriction digested tester cDNA were filled in to generate blunt ends for adapter ligation. This modification did not affect the subtraction efficiency. Two tester populations were then created with different adapters, and the driver library remained without adapters. The tester and driver libraries were then hybridized using excess driver cDNA. In the first hybridization step, driver was separately hybridized with each of the two tester cDNA populations. This resulted in populations of (a) unhybridized tester cDNAs, (b) tester cDNAs hybridized to other tester cDNAs, (c) tester cDNAs hybridized to driver cDNAs and (d) unhybridized driver cDNAs. The two separate hybridization reactions were then combined, and rehybridized in the presence of additional denatured driver cDNA. Following this second hybridization, in addition to populations (a) through (d), a fifth population (e)

was generated in which tester cDNA with one adapter hybridized to tester cDNA with the second adapter. Accordingly, the second hybridization step resulted in enrichment of differentially expressed sequences which could be used as templates for PCR amplification with adaptor-specific primers.

5 The ends were then filled in, and PCR amplification was performed using adaptor-specific primers. Only population (e), which contained tester cDNA that did not hybridize to driver cDNA, was amplified exponentially. A second PCR amplification step was then performed, to reduce background and further enrich differentially expressed sequences.

10 Fifty-seven cDNA clones were isolated from the subtracted library (referred to as LAP1) and sequenced. The determined cDNA sequences for 16 of these clones are provided in SEQ ID NO: 101-116. The sequences of SEQ ID NO: 101 and 114 showed no significant homologies to previously identified sequences. The sequences of SEQ ID NO: 102-109 and 112 showed some similarity to previously
15 identified sequences, while the sequences of SEQ ID NO: 113, 115 and 116 showed some similarity to previously isolated ESTs.

C. Isolation of cDNA Sequences from Small Cell Lung Carcinoma

Libraries using PCR-Based cDNA Library Subtraction

A subtracted cDNA library for small cell lung carcinoma (referred to as
20 SCL1) was prepared using essentially the modified PCR-based subtraction process described above. cDNA from small cell lung carcinoma was subtracted against cDNA from a panel of normal tissues, including normal lung, brain, kidney, liver, pancreas, skin, heart, lymph node and spleen. Both tester and driver poly A+ RNA were initially amplified using SMART PCR cDNA synthesis kit (Clontech, Palo Alto, CA). The
25 tester and driver double stranded cDNA were separately digested with five restriction enzymes (DraI, MscI, PvuII, SmaI, and StuI). These restriction enzymes generated blunt end cuts and the digestion resulted in an average insert size of 600 bp. Digestion with this set of restriction enzymes eliminates the step required to generate blunt ends by filling in of the cDNA ends. These modifications did not affect subtraction
30 efficiency.

Eighty-five clones were isolated and sequenced. The determined cDNA sequences for 31 of these clones are provided in SEQ ID NO: 117-147. The sequences of SEQ ID NO: 122, 124, 126, 127, 130, 131, 133, 136, 139 and 147 showed no significant homologies to previously identified sequences. The sequences of SEQ ID
5 NO: 120, 129, 135, 137, 140, 142, 144 and 145 showed some similarity to previously identified gene sequences, while the sequences of SEQ ID NO: 114, 118, 119, 121, 123, 125, 128, 132, 134, 138, 141, 143 and 147 showed some similarity to previously isolated ESTs.

In further studies, three additional cDNA libraries were generated from
10 poly A+ RNA from a single small cell lung carcinoma sample subtracted against a pool of poly A+ RNA from nine normal tissues (lung, brain, kidney, liver, pancreas, skin, heart pituitary gland and spleen). For the first library (referred to as SCL2), the subtraction was carried out essentially as described above for the LAP1 library, with the exception that the tester and driver were digested with PvuII, StuI, MscI and DraI. The
15 ratio of tester and driver cDNA used was as recommended by Clontech. For the second library (referred to as SCL3), subtraction was performed essentially as for SCL2 except that cDNA for highly redundant clones identified from the SCL2 library was included in the driver cDNA. Construction of the SCL4 library was performed essentially as described for the SCL3 library except that a higher ratio of driver to tester was
20 employed.

Each library was characterized by DNA sequencing and database analyses. The determined cDNA sequence for 35 clones isolated from the SCL2 library are provided in SEQ ID NO: 245-279, with the determined cDNA sequences for 21 clones isolated from the SCL3 library and for 15 clones isolated from the SCL4 library
25 being provided in SEQ ID NO: 280-300 and 301-315, respectively. The sequences of SEQ ID NO: 246, 254, 261, 262, 304, 309 and 311 showed no significant homologies to previously identified sequences. The sequence of SEQ ID NO: 245, 248, 255, 266, 270, 275, 280, 282, 283, 288-290, 292, 295, 301 and 303 showed some homology to previously isolated ESTs, while the sequences of SEQ ID NO: 247, 249-253, 256-260,
30 263-265, 267-269, 271-274, 276-279, 281, 284-287, 291, 293, 294, 296-300, 302, 305-308, 310 and 312-315 showed some homology to previously identified gene sequences.

D. Isolation of cDNA Sequences from a Neuroendocrine Library using
PCR-Based cDNA Library Subtraction

Using the modified PCR-based subtraction process, essentially as described above for the LAP1 subtracted library, a subtracted cDNA library (referred to as MLN1) was derived from a lung neuroendocrine carcinoma that had metastasized to the subcarinal lymph node, by subtraction with a panel of nine normal tissues, including normal lung, brain, kidney, liver, pancreas, skin, heart, lymph node and spleen.

Ninety-one individual clones were isolated and sequenced. The determined cDNA sequences for 58 of these clones are provided in SEQ ID NO: 147-222. The sequences of SEQ ID NO: 150, 151, 154, 157, 158, 159, 160, 163, 174, 175, 178, 186-190, 192, 193, 195-200, 208-210, 212-215 and 220 showed no significant homologies to previously identified sequences. The sequences of SEQ ID NO: 152, 155, 156, 161, 165, 166, 176, 179, 182, 184, 185, 191, 194, 221 and 222 showed some similarity to previously identified gene sequences, while the sequences of SEQ ID NO: 148, 149, 153, 164, 167-173, 177, 180, 181, 183, 201-207, 211 and 216-219 showed some similarity to previously isolated ESTs.

The determined cDNA sequences of an additional 442 clones isolated from the MLN1 library are provided in SEQ ID NO: 341-782.

E. Isolation of cDNA Sequences from a Squamous Cell Lung Carcinoma
Library using PCR-Based cDNA Library Subtraction

A subtracted cDNA library for squamous cell lung carcinoma (referred to as SQL1) was prepared, essentially using the modified PCR-based subtraction process described above, except the tester and driver double stranded cDNA were separately digested with four restriction enzymes (DraI, MscI, PvuII and StuI) cDNA from a pool of two squamous cell lung carcinomas was subtracted against cDNA from a pool of 10 normal tissues, including normal lung, brain, kidney, liver, pancreas, skin, heart, spleen, esophagus and trachea.

Seventy-four clones were isolated and sequenced. The determined cDNA sequences for 22 of these clones are provided in SEQ ID NO: 223-244. The sequence of SEQ ID NO: 241 showed no significant homologies to previously

identified sequences. The sequences of SEQ ID NO: 223, 225, 232, 233, 235, 238, 239, 242 and 243 showed some similarity to previously identified gene sequences, while the sequences of SEQ ID NO: 224, 226-231, 234, 236, 237, 240, 241 and 244 showed some similarity to previously isolated ESTs.

5 The sequences of an additional 12 clones isolated during chracterization of cDNA libraries prepared from lung tumor tissue are provided in SEQ ID NO: 813-824. Comparison of these sequences with those in the GenBank database and the GeneSeq DNA database revealed no significant homologies to previously identified sequences.

10

EXAMPLE 2

SYNTHESIS OF POLYPEPTIDES

Polypeptides may be synthesized on a Perkin Elmer/Applied Biosystems
15 Division 430A peptide synthesizer using FMOC chemistry with HPTU (O-Benzotriazole-N,N,N',N'-tetramethyluronium hexafluorophosphate) activation. A Gly-Cys-Gly sequence may be attached to the amino terminus of the peptide to provide a method of conjugation, binding to an immobilized surface, or labeling of the peptide. Cleavage of the peptides from the solid support may be carried out using the following
20 cleavage mixture: trifluoroacetic acid:ethanedithiol:thioanisole:water:phenol (40:1:2:2:3). After cleaving for 2 hours, the peptides may be precipitated in cold methyl-t-butyl-ether. The peptide pellets may then be dissolved in water containing 0.1% trifluoroacetic acid (TFA) and lyophilized prior to purification by C18 reverse phase HPLC. A gradient of 0%-60% acetonitrile (containing 0.1% TFA) in water
25 (containing 0.1% TFA) may be used to elute the peptides. Following lyophilization of the pure fractions, the peptides may be characterized using electrospray or other types of mass spectrometry and by amino acid analysis.

EXAMPLE 3

PREPARATION OF ANTIBODIES AGAINST LUNG CANCER ANTIGENS

Polyclonal antibodies against the lung cancer antigen L773P (SEQ ID
5 NO: 783) were prepared as follows.

Rabbits were immunized with recombinant protein expressed in and
purified from *E. coli* as described above. For the initial immunization, 400 µg of
antigen combined with muramyl dipeptide (MDP) was injected subcutaneously (S.C.).
Animals were boosted S.C. 4 weeks later with 200 µg of antigen mixed with incomplete
10 Freund's Adjuvant (IFA). Subsequent boosts of 100 µg of antigen mixed with IFA
were injected S.C. as necessary to induce high antibody titer responses. Serum bleeds
from immunized rabbits were tested for L773P-specific reactivity using ELISA assays
with purified protein and showed strong reactivity to L773P. Polyclonal antibodies
against L773P were affinity purified from high titer polyclonal sera using purified
15 protein attached to a solid support.

EXAMPLE 4

PROTEIN EXPRESSION OF LUNG TUMOR-SPECIFIC ANTIGENS

20 Full-length L773P (amino acids 2-364 of SEQ ID NO: 783), with a 6X
His Tag, were subcloned into the pPDM expression vector and transformed into either
BL21 CodonPlus or BL21 pLysS host cells using standard techniques. High levels of
expression were observed in both cases. Similarly, the N-terminal portion of L773P
(amino acids 2-71 of SEQ ID NO: 783; referred to as L773PA), with a 6X His tag were
25 subcloned into the vector pPDM and transformed into BL21 CodonPlus host cells. Low
levels of expression were observed by N-terminal sequencing. The sequence of the
expressed constructs for L773P and L773PA are provided in SEQ ID NO: 784 and 785,
respectively.

30

From the foregoing it will be appreciated that, although specific embodiments of the invention have been described herein for purposes of illustration, various modifications may be made without deviating from the spirit and scope of the invention. Accordingly, the invention is not limited except as by the appended claims.

CLAIMS

What is claimed:

1. An isolated polypeptide, comprising at least an immunogenic portion of a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(a) sequences recited in SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800, 802, 804, 807, 808 and 811-826;

(b) sequences that hybridize to a sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800, 802, 804, 807, 808 and 811-826 under moderately stringent conditions; and

(c) complements of sequences of (a) or (b).

2. An isolated polypeptide according to claim 1, wherein the polypeptide comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-

782, 784, 785, 790, 792, 794, 796, 800, 802, 804, 807, 808 and 811-826 or a complement of any of the foregoing polynucleotide sequences.

3. An isolated polypeptide comprising a sequence recited in any one of SEQ ID NOs: 786, 787, 791, 793, 795, 797-799, 806, 809 and 827.

4. An isolated polynucleotide encoding at least 15 amino acid residues of a lung tumor protein, or a variant thereof that differs in one or more substitutions, deletions, additions and/or insertions such that the ability of the variant to react with antigen-specific antisera is not substantially diminished, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide comprising a sequence recited in any one of SEQ ID NO: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800, 802, 804, 807, 808 and 811-826, or a complement of any of the foregoing sequences.

5. An isolated polynucleotide encoding a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide comprising a sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800, 802, 804, 807, 808 and 811-826 or a complement of any of the foregoing sequences.

6. An isolated polynucleotide, comprising a sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800, 802, 804, 807, 808 and 811-826.

7. An isolated polynucleotide, comprising a sequence that hybridizes to a sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800, 802, 804, 807, 808 and 811-826 under moderately stringent conditions.

8. An isolated polynucleotide complementary to a polynucleotide according to any one of claims 4-7.

9. An expression vector, comprising a polynucleotide according to any one of claims 4-8.

10. A host cell transformed or transfected with an expression vector according to claim 9.

11. An isolated antibody, or antigen-binding fragment thereof, that specifically binds to a lung tumor protein that comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30,

33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800, 802, 804, 807, 808 and 811-826 or a complement of any of the foregoing polynucleotide sequences.

12. A fusion protein, comprising at least one polypeptide according to claim 1.

13. A fusion protein according to claim 12, wherein the fusion protein comprises an expression enhancer that increases expression of the fusion protein in a host cell transfected with a polynucleotide encoding the fusion protein.

14. A fusion protein according to claim 12, wherein the fusion protein comprises a T helper epitope that is not present within the polypeptide of claim 1.

15. A fusion protein according to claim 12, wherein the fusion protein comprises an affinity tag.

16. An isolated polynucleotide encoding a fusion protein according to claim 12.

17. A pharmaceutical composition, comprising a physiologically acceptable carrier and at least one component selected from the group consisting of:

- (a) a polypeptide according to claim 1;
- (b) a polynucleotide according to claim 4;
- (c) an antibody according to claim 11;
- (d) a fusion protein according to claim 12; and
- (e) a polynucleotide according to claim 16.

18. An immunogenic composition comprising an immunostimulant and at least one component selected from the group consisting of:

- (a) a polypeptide according to claim 1;
- (b) a polynucleotide according to claim 4;
- (c) an antibody according to claim 11;
- (d) a fusion protein according to claim 12; and
- (e) a polynucleotide according to claim 16.

19. An immunogenic composition according to claim 18, wherein the immunostimulant is an adjuvant.

20. An immunogenic composition according to any claim 18, wherein the immunostimulant induces a predominantly Type I response.

21. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a pharmaceutical composition according to claim 17.

22. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of an immunogenic composition according to claim 18.

23. A pharmaceutical composition comprising an antigen-presenting cell that expresses a polypeptide according to claim 1, in combination with a pharmaceutically acceptable carrier or excipient.

24. A pharmaceutical composition according to claim 23, wherein the antigen presenting cell is a dendritic cell or a macrophage.

25. An immunogenic composition comprising an antigen-presenting cell that expresses a polypeptide comprising at least an immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(a) sequences recited in SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826;

(b) sequences that hybridize to a sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826 under moderately stringent conditions; and

(c) complements of sequences of (i) or (ii);
in combination with an immunostimulant.

26. An immunogenic composition according to claim 25, wherein the immunostimulant is an adjuvant.

27. An immunogenic composition according to claim 25, wherein the immunostimulant induces a predominantly Type I response.

28. An immunogenic composition according to claim 25, wherein the antigen-presenting cell is a dendritic cell.

29. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of an antigen-presenting cell that expresses a polypeptide comprising at least an immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(a) sequences recited in SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826;

(b) sequences that hybridize to a sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826 under moderately stringent conditions; and

(c) complements of sequences of (i) or (ii) encoded by a polynucleotide recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826;

and thereby inhibiting the development of a cancer in the patient.

30. A method according to claim 29, wherein the antigen-presenting cell is a dendritic cell.

31. A method according to any one of claims 21, 22 and 29, wherein the cancer is lung cancer.

32. A method for removing tumor cells from a biological sample, comprising contacting a biological sample with T cells that specifically react with a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) polynucleotides recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826; and

(ii) complements of the foregoing polynucleotides;

wherein the step of contacting is performed under conditions and for a time sufficient to permit the removal of cells expressing the antigen from the sample.

33. A method according to claim 32, wherein the biological sample is blood or a fraction thereof.

34. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient a biological sample treated according to the method of claim 32.

35. A method for stimulating and/or expanding T cells specific for a lung tumor protein, comprising contacting T cells with at least one component selected from the group consisting of:

(a) polypeptides comprising at least an immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(i) sequences recited in SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826;

(ii) sequences that hybridize to a sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826 under moderately stringent conditions; and

(iii) complements of sequences of (i) or (ii);

(b) polynucleotides encoding a polypeptide of (a); and

(c) antigen presenting cells that express a polypeptide of (a);

under conditions and for a time sufficient to permit the stimulation and/or expansion of T cells.

36. An isolated T cell population, comprising T cells prepared according to the method of claim 35.

37. A method for inhibiting the development of a cancer in a patient, comprising administering to a patient an effective amount of a T cell population according to claim 36.

38. A method for inhibiting the development of a cancer in a patient, comprising the steps of:

(a) incubating CD4⁺ and/or CD8⁺ T cells isolated from a patient with at least one component selected from the group consisting of:

(i) polypeptides comprising at least an immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(1) sequences recited in SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826;

(2) sequences that hybridize to a sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826 under moderately stringent conditions; and

(3) complements of sequences of (1) or (2);

(ii) polynucleotides encoding a polypeptide of (i); and

(iii) antigen presenting cells that expresses a polypeptide of (i);

such that T cells proliferate; and

(b) administering to the patient an effective amount of the proliferated T cells, and thereby inhibiting the development of a cancer in the patient.

39. A method for inhibiting the development of a cancer in a patient, comprising the steps of:

(a) incubating CD4⁺ and/or CD8⁺ T cells isolated from a patient with at least one component selected from the group consisting of:

(i) polypeptides comprising at least an immunogenic portion of a lung tumor protein, or a variant thereof, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence selected from the group consisting of:

(1) sequences recited in SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826;

(2) sequences that hybridize to a sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826 under moderately stringent conditions; and

(3) complements of sequences of (1) or (2);

(ii) polynucleotides encoding a polypeptide of (i); and

(iii) antigen presenting cells that express a polypeptide of (i);

such that T cells proliferate;

(b) cloning at least one proliferated cell to provide cloned T cells; and

(c) administering to the patient an effective amount of the cloned T cells, and thereby inhibiting the development of a cancer in the patient.

40. A method for determining the presence or absence of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with a binding agent that binds to a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826 or a complement of any of the foregoing polynucleotide sequences;

(b) detecting in the sample an amount of polypeptide that binds to the binding agent; and

(c) comparing the amount of polypeptide to a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient.

41. A method according to claim 40, wherein the binding agent is an antibody.

42. A method according to claim 43, wherein the antibody is a monoclonal antibody.

43. A method according to claim 40, wherein the cancer is lung cancer.

44. A method for monitoring the progression of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient at a first point in time with a binding agent that binds to a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any

one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826 or a complement of any of the foregoing polynucleotide sequences;

(b) detecting in the sample an amount of polypeptide that binds to the binding agent;

(c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and

(d) comparing the amount of polypeptide detected in step (c) to the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

45. A method according to claim 44, wherein the binding agent is an antibody.

46. A method according to claim 45, wherein the antibody is a monoclonal antibody.

47. A method according to claim 44, wherein the cancer is a lung cancer.

48. A method for determining the presence or absence of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NO: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-

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(b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide; and

(c) comparing the amount of polynucleotide that hybridizes to the oligonucleotide to a predetermined cut-off value, and therefrom determining the presence or absence of a cancer in the patient.

49. A method according to claim 48, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a polymerase chain reaction.

50. A method according to claim 48, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a hybridization assay.

51. A method for monitoring the progression of a cancer in a patient, comprising the steps of:

(a) contacting a biological sample obtained from a patient with an oligonucleotide that hybridizes to a polynucleotide that encodes a lung tumor protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NO: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800-804, 807, 808 and 810-826 or a complement of any of the foregoing polynucleotide sequences;

- (b) detecting in the sample an amount of a polynucleotide that hybridizes to the oligonucleotide;
- (c) repeating steps (a) and (b) using a biological sample obtained from the patient at a subsequent point in time; and
- (d) comparing the amount of polynucleotide detected in step (c) to the amount detected in step (b) and therefrom monitoring the progression of the cancer in the patient.

52. A method according to claim 51, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a polymerase chain reaction.

53. A method according to claim 51, wherein the amount of polynucleotide that hybridizes to the oligonucleotide is determined using a hybridization assay.

54. A diagnostic kit, comprising:

- (a) one or more antibodies according to claim 11; and
- (b) a detection reagent comprising a reporter group.

55. A kit according to claim 54, wherein the antibodies are immobilized on a solid support.

56. A kit according to claim 54, wherein the detection reagent comprises an anti-immunoglobulin, protein G, protein A or lectin.

57. A kit according to claim 54, wherein the reporter group is selected from the group consisting of radioisotopes, fluorescent groups, luminescent groups, enzymes, biotin and dye particles.

58. An oligonucleotide comprising 10 to 40 contiguous nucleotides that hybridize under moderately stringent conditions to a polynucleotide that encodes a lung tumor

protein, wherein the tumor protein comprises an amino acid sequence that is encoded by a polynucleotide sequence recited in any one of SEQ ID NOs: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800, 802, 804, 807, 808 and 811-826, or a complement of any of the foregoing polynucleotides.

59. A oligonucleotide according to claim 58, wherein the oligonucleotide comprises 10-40 contiguous nucleotides recited in any one of SEQ ID NO: 1, 11-13, 15, 20, 23-27, 29, 30, 33, 34, 39, 41, 43-46, 51, 52, 57, 58, 60, 62, 65-67, 69-71, 74, 76, 79, 80, 84, 86, 89-92, 95, 97, 98, 101, 110, 111, 113-119, 121-128, 130-134, 136, 138, 139, 141, 143, 146-151, 153, 154, 157-160, 162-164, 167-178, 180, 181, 183, 186-190, 192, 193, 195-220, 224, 226-231, 234, 236, 237, 240, 241, 244-246, 248, 254, 255, 261, 262, 266, 270, 275, 280, 282, 283, 288, 289, 290, 292, 295, 301, 303, 304, 309, 311, 341-782, 784, 785, 790, 792, 794, 796, 800, 802, 804, 807, 808 and 811-82.

60. A diagnostic kit, comprising:

- (a) an oligonucleotide according to claim 59; and
- (b) a diagnostic reagent for use in a polymerase chain reaction or hybridization assay.

SEQUENCE LISTING

<110> Corixa Corporation
 Wang, Tongtong
 Bangur, Chaitanya S.
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 Carter, Darrick
 Retter, Marc
 Mannion, Jane

<120> COMPOSITIONS AND METHODS FOR THERAPY AND
 DIAGNOSIS OF LUNG CANCER

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tccatcttct	ggttgaggga	atccacaaac	cactcatccc	ccatgaaatt	gcaggccatg	180
tctacatctc	cattatataa	taggatctgg	gatttctgtg	agctaagcag	cttcagatac	240
tgggagttca	tgcttcggta	gagacggcgg	tactgta			277

<210> 23

<211> 634

<212> DNA

<213> Homo sapien

<400> 23

tctgaccatc	catatccaat	gttctcattt	aaacattacc	cagcatcatt	gtttataatc	60
agaaactctg	gtccttctgt	ctggtggcac	ttagagtctt	ttgtgccata	atgcagcagt	120
atggagggag	gattttatgg	agaaatgggg	atagtcttca	tgaccacaaa	taaataaagg	180
aaaactaagc	tgcatctgtg	gttttgaaaa	ggttattata	cttcttaaca	attctttttt	240
tcagggactt	ttctagctgt	atgactgtta	cttgaccttc	tttgaaaagc	attcccaaaa	300
tgctctattt	tagatagatt	aacattaacc	aacataattt	tttttagatc	gagtcagcat	360
aaatttctaa	gtcagcctct	agtcgtgggt	catctctttc	acctgcattt	tatttgggtg	420
ttgtctgaag	aaaggaaaga	ggaaagcaaa	tacgaattgt	actatttgta	ccaaatcttt	480
gggattcatt	ggcaaataat	ttcagtgtgg	tgtattatta	aatagaaaaa	aaaaattttg	540
tttcttaggt	tgaagggtcta	attgatacgt	ttgacttatg	atgaccattt	atgcactttc	600
aatgaattt	gctttcaaaa	taaatgaaga	gcag			634

<210> 24

<211> 512

<212> DNA

<213> Homo sapien

<400> 24

gcaaaacaag	cctaagcaag	cacaacgaag	agcagaagtc	agtgaatta	aaaagaggaa	60
aaagaaaaat	cataaaaatc	ataaaaagtt	atttctttga	aaagatcaat	gaaatttagc	120
aagactgaca	cagataaaaa	ggaattagac	ccaaatcagt	gaacagggaat	gaaatagagg	180
atatcactac	agaggctgca	gccattgaaa	ggataattag	gaaatcccac	agataacttt	240
gtgctcataa	atttgacaat	gtagaggaaa	tatcttttag	tttaatttag	tttttatttt	300
agtttttctc	aaaaactaaa	acttaataaa	actcaacca	gacaaaatag	acaatcagaa	360
tgtaggcata	cctcagagat	gtggcggatt	tggtttcaga	ctactgcaat	aaaccaaata	420
tggcaataaa	aggagtcaca	gaaagtgggt	tcccagtgtg	tatatataaa	agttacattt	480
actctatgaa	gtgcaataac	attttgtcta	aa			512

<210> 25

<211> 461

<212> DNA

<213> Homo sapien

<400> 25

ctctgtttca	gcacctcatt	gggattattg	aactcattaa	attctttaca	tgaacttgaa	60
ttgttcattg	aaatctctag	ccatttccct	ggttaaacag	gataatcttt	ttttttcact	120
aaagaacatt	cgtgggtggt	tagtgatgag	gttaatatcc	ccctcttgct	cacctccaca	180
ttggaaaaac	cacgttggac	tgagttttga	ggagcaaaga	actaatcact	tgaccaaagg	240
ggccctgtat	ccccacaagc	cctgggtatt	tttctctcat	agagagaaga	gggtctgtat	300
ggatacctga	aaatgtgatt	ttatatattc	ttggcatcca	ggggagaaaa	atcaaaaagc	360
aaggaagtta	cagttatctc	cccagaaatt	aatgggtcat	gtcaagacta	taggttttca	420

tttccttctg ttgcttggtta gaatgatggt cttgtgggaa a 461

<210> 26
 <211> 317
 <212> DNA
 <213> Homo sapien

<400> 26
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 taggatttat tacactaaaa aaaaattagt ttttgaaaag aaataggaga atacagaaac 120
 atgaatttca cgaggctatc atctaacagt gggggctttc tacacacgtg gtgccaaaat 180
 gtgtcattct gagtcaattg caattcctct ctaggagtga aaagagataa aagataagcc 240
 aagaaccctg gacagattct tgggtgttggg gacaaagagg aaaggacctg agaatggggc 300
 tgggtggggag aggggggg 317

<210> 27
 <211> 250
 <212> DNA
 <213> Homo sapien

<400> 27
 taattgctgt gattattaga attctatcat gactgtattg tagtttttgc tctattycag 60
 ataagcmaga tctaagaagt tatcaaaact attctttaaa atgctaaagc aggtaacttt 120
 ttcttccatt attttttctt cctaccactg agttttgtaa tgaattcctt gtgtatacaa 180
 gcaatacagg tgaatactaa actgttatct ttagcttctt caaaagctat tttagaaagc 240
 ttcttggaag 250

<210> 28
 <211> 532
 <212> DNA
 <213> Homo sapien

<400> 28
 cctatatcat tcatattatc agaagctgct tgctgcttag caagttggtg ggtttgattt 60
 tcttgggttg ctttgcagac ctcccttgag aggattcctt ctggatggag atttctttgt 120
 tgctgtctcc cttgccacaa ctctgaccaa gattgcattg cgctatgtag ctttgggttca 180
 ggagaagaaa aagcaaaatt cttttgttgc tgaggctatg ttgctcatgg ctactatcct 240
 gcatttgagg aaatcctctc ttcttaagaa gccaatctat gatgatgatg tggatcgaat 300
 ttccctgtgc ctcaagggtc tgtctgaatg ttcaccttta atgaatgaca ttttcaataa 360
 ggaatgcaga cagtcctctt ctacatggtt atctgctaaa ctagaagaag agaaattatc 420
 ccaaaagaaa gaatctgaaa agaggaatgt gacagtacag cctgatgacc ccatttcctt 480
 catgcaacta actgctaaga atgaaatgaa ctgcaaggaa gatcagtttc ag 532

<210> 29
 <211> 486
 <212> DNA
 <213> Homo sapien

<400> 29
 ctgttttttg acttaattaa cywttgcaag tggaaaccaa gaaataattg tagcataact 60
 ctctctattg tcatgttgct tctttctgca aatatatctt acaagttaga ctttaaaccct 120
 ttgatctccc acacaaaaag agaaaataat atttatatgg aagtaatttt attttagtgt 180
 ttgtgattta ttgtggagag caggbgttta aaaattttag aatttctttt taacaaaatc 240
 aaatacattg ttaaggtaac aaagaataat tctactattc agcatttcaa agcaacatat 300
 tctacaactt caaagatatt tgcaaaaata atacaactgt tgaagttcaa atgttatgga 360

aagaaacatt	agaagtatga	aaagtggtag	aaaaacatgt	ttctttttat	tctcttggat	420
atatatctat	atatttagga	aaatacatat	atgtatgtgt	atgtatatat	atgtatgaaa	480
atatac						486

<210> 30
 <211> 240
 <212> DNA
 <213> Homo sapien

<400> 30						
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aatgtctctt	gacccaggtt	ccaagttcac	cctgttgctt	gttcttcctc	ccaccttttg	120
gggttctata	actgcatccc	ccacacatct	ttcaccacca	ccccatacat	accagctctc	180
ctgttggtggg	attcaggaca	taggaagagt	tgctgaaggc	acgggtgctt	ttgggattcg	240

<210> 31
 <211> 233
 <212> DNA
 <213> Homo sapien

<400> 31						
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tgggggaagc	catccaagag	aagatccaag	agaaggctgt	gaagcgggag	gacctgttca	120
tcgtcagcaa	gttgtggccc	actttctttg	agagaccctt	tgtgaggaaa	gcctttgaga	180
agaccctcaa	ggacctgaag	ctgagctatc	tggacgtcta	tcttattcac	tgg	233

<210> 32
 <211> 233
 <212> DNA
 <213> Homo sapien

<400> 32						
gaggaatgct	ggactggagg	cccttgaggc	cagatggcaa	gagggtgaca	gcttcctttc	60
ctgtgtgtac	tctgtccagt	tcctttagaa	aaaatggatg	cccagaggac	tcccaaccct	120
ggcttggggt	caagaaacag	ccagcaagag	ttaggggcct	tagggcactg	ggctgtgtgt	180
ccattgaagc	cgactctggc	cctggccctt	acttgcttct	ctagctctct	agg	233

<210> 33
 <211> 319
 <212> DNA
 <213> Homo sapien

<400> 33						
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ctggaattgc	ttggttctcc	tccatgtggc	ctctccagta	ggctagctca	ggcttattca	120
catgatggct	tcaggattcc	aaagagagtg	agagtagaag	ctgaaagact	tcttgagttc	180
ttggcctgga	actgggacta	ggacagtgtc	acttctgcta	agttcttttg	gtcagagcaa	240
atcacaaggc	tttaccaga	ttcaagggat	gagaaacaga	ctacatgtct	tgatgagggg	300
aaccacaaag	agcttgtgg					319

<210> 34
 <211> 340
 <212> DNA
 <213> Homo sapien

<400> 34

tacagatttta	attcatgtta	ttaactccct	gccttttacc	tcctccctcc	tcctttggca	60
caactgccag	atggatgtgg	ctggaagtca	gaggacattc	tcgtgggttc	gtgggcctag	120
ggtacaaatg	acctcagcgt	gacagcaaac	aggacagaga	agaccaggct	cttactcagg	180
aatccaccag	ccaggagaat	gacaatgttg	aacaccggaa	ccctgatgat	atctgtcaca	240
tttgtaaggt	tgatttcaga	gtcaggagtg	gagacatcgg	cagttgactt	gggtggagct	300
tgggtcacag	ttctggggct	ggtatagagt	gggcacaagg			340

<210> 35

<211> 170

<212> DNA

<213> Homo sapien

<400> 35

acatgggtcc	ttcactcctc	gctgagatgt	tgccgcagcc	ttttcttcca	atgcggttgt	60
ggcaggagaa	tccacggatg	taatgttttc	acctttttcc	ctgaggggtgc	tttctgagga	120
accagycctt	aagaggtggg	gtcttggatt	cctgacccag	gcgtccggca		170

<210> 36

<211> 475

<212> DNA

<213> Homo sapien

<400> 36

ctgttttttg	acttaattaa	ccattgcaag	tggaaccaa	gaaataattg	tagcataact	60
ctctctattg	kcatgttgct	tctttctgca	aatatatctt	agaagttaga	ctttaaacct	120
ttgatctccc	acaccaaag	agaaaataat	atttatatgg	aagtaatttt	atttttagtgt	180
ttgtgattta	ttgtggagag	cagggtgttta	aaaatttttag	aattttcttta	acaaaattct	240
aaagagaaaa	taaaaaagaa	atcacagtat	ttacagagat	aacagaatgg	cttagccatg	300
caaaacaaat	aactttgggt	tttccccttt	tactttgggt	taaatgttga	ccaagattca	360
attttttttc	ctgccaaaata	aaacttcaat	aaaagttag	aggcaaaaata	acgtattttc	420
tttttttccc	ataatatattt	atacagcatc	gagcttaaga	atattttatg	cattt	475

<210> 37

<211> 246

<212> DNA

<213> Homo sapien

<400> 37

ccttgagctt	gggccgggca	ctgaggcgcc	ccacatatgc	tgagagcagg	gggaacgcat	60
ccaggcagcc	aggggctagg	acctcatgga	tcagcagcaa	gtccagcagg	ttgtagtcag	120
cgaaggagat	ctgggtctccc	acaatgaagg	tcttgcctcc	ctgggtcttg	gacagcaggg	180
tctcaaaagg	cttcagttgc	ccgggcagtg	ccttcacata	gtcatccttg	cccacctcat	240
agttgg						246

<210> 38

<211> 512

<212> DNA

<213> Homo sapien

<400> 38

gctggaagtg	aaatgcagat	cagacccatt	gtgatgtcac	agaaagatgg	ggacaggcca	60
aagaaaaaag	tgactttcaa	ctcttcttcc	atcattttta	tcatcaccag	tgatgaatca	120
ctgtcagttg	acgacagcga	caaaaccaat	gggtccaaag	ttgatgtaat	ccaagttcgt	180
cctttgtagg	aatgaagaat	ggcaacgaaa	gatggggcct	taaattggat	gccacttttg	240

gactttcatc	ataagaagtg	tctggaatac	ccgttctatg	taatatcaac	agaaccttgt	300
ggtccagcag	gaaatccgaa	ttgcccatat	gctcttgggc	ctcaggaaga	ggttgaacaa	360
aaacaaattc	ttttaattca	acgggtgctt	tacataatga	aaaaaccact	tgtggcacac	420
gatgggcatac	taacatcatc	atcttctaata	gtgttggaga	ttttcatttc	aaatatattt	480
tttaaattac	tctattttcc	aaaacacgta	at			512

<210> 39
 <211> 370
 <212> DNA
 <213> Homo sapien

ttttatgaac	aagatataag	gatcaaaaaa	aagggtgttg	atatgttttt	ccaagcagag	60
atgtactcga	ctctgtccta	tttagccttc	ccatacctga	cttctaataca	cttttcctgg	120
tgccttycca	tctccctaac	ccccctcac	agggatgcct	cctcccaagg	ctccagaaac	180
tctgaccctc	gcaactgctg	aggagccca	tgaattgctg	gtcaatatcg	ctcatcctct	240
akactccatc	ctgcgtgtgc	ttcttcctac	aagagctaga	gaggcactga	ctgataaata	300
cctgtcacct	gcccccttcc	cagaggggtga	aactccaccc	actcccactg	cagaaatgaa	360
tcttaaattg						370

<210> 40
 <211> 204
 <212> DNA
 <213> Homo sapien

cctgaggggtt	ttccctttta	attttcattg	agttgtccat	ctccagcata	tagggcttca	60
ggagcagagc	agaccttggt	tttagtggtt	ccatgggata	aaatgggatt	ggaggagcta	120
gaagaattca	gggtctggtc	caatctgcc	gtcttcctga	aatatcgaaa	atacaccagg	180
gctgctatat	cagagccacc	ctgg				204

<210> 41
 <211> 447
 <212> DNA
 <213> Homo sapien

caggcagcaa	ttcgtaaaga	attaaatgag	tacaaaagta	atgaaatgga	ggtacatgca	60
tcaagcaagc	acttgacaag	attccacagg	ccatagagat	tttcttctga	gaagaatttg	120
tgtttaattt	tttgatacca	acactgaaca	ttcatcaggg	aactttcctg	aagttcagct	180
caagactacc	ctacctgctg	tgtttgtgag	aagagtagga	tcacacacac	agggtgcaatc	240
ttgaccacac	ttacctgcaa	gaggagtaac	cagaggacac	acttccttcc	ttctttgggtg	300
tctgaggagt	gtgaactggt	gggtcagtt	aagaccaaac	ataactctat	cagaagaaaa	360
ctgttggttg	cctttcaacc	ttgttttaca	gttctgcagt	gtagtggagg	acgggcaacg	420
tgcattgtgca	ggctcaccac	tcccagg				447

<210> 42
 <211> 498
 <212> DNA
 <213> Homo sapien

ctggttttgt	aaaaacagtc	tctttattct	actgtgctga	aaccctcacc	aatatagaaa	60
attagattct	cattgcactg	aactatattt	atatgcctaa	gtatgtagaa	gtaaaattat	120
ataccccaaa	aggattttat	cttgttgtat	atattaaatg	ttatttctgc	atatagggtc	180

ttttatggag	aaactgatga	tgataagctt	aatactcact	tgttttagcag	catctgaatg	240
cacaaatgct	ttatatatct	cttctgcttt	acagggcaaa	agatcagact	ctgttttctt	300
atagtcttca	caagccagcc	agaactcaat	attctcctca	ctgaattcag	actttaggaa	360
acttccaaag	acattttgac	cagtttggtt	ggcaagaagt	ttttccagag	attgagacca	420
ttgcattact	tcagcagcag	aaagtacatc	cttggacttg	gaagatttca	ttccagattc	480
cagatgtggg	atcataga					498

<210> 43
 <211> 312
 <212> DNA
 <213> Homo sapien

<400> 43						
caggaaggcg	gccaaagaatg	tgagtgcaaa	gattggttcc	tgagagcccc	gagaagaaaa	60
ttcatgacag	tgtctgggct	gccaaagaag	cagtgccctt	gtgatcattt	caagggcaat	120
gtgaagaaaa	caagacacca	aaggcaccac	agaaagccaa	acaagcattc	cagagcctgc	180
cagcaatttc	tcaaacaatg	tcagctaaga	agctttgctc	tgcctttgta	ggagctctga	240
gcgcccactc	ttccaattaa	acattctcag	ccaagaagac	agtgagcaca	cctaccagac	300
actcttcttc	tc					312

<210> 44
 <211> 417
 <212> DNA
 <213> Homo sapien

<400> 44						
ctaacacatt	tactctccac	tattcgtact	ctggtagcca	tgtaaacccc	atcagagatt	60
ccttctcaag	ccatgtctca	gagctgagag	gcaccccagc	aagttttgca	gtcacagtt	120
ttttccgtaa	attacttatt	ctataaaatt	ggagtaggcc	ataaaacttg	gagggcccta	180
gaccaatttt	ttggattatt	tttcgtcttc	tatcattccg	ctgatcttag	atattctctg	240
cattaaatat	taaatatcac	ttctaggtcg	aaaaatcccc	ctaaaaatat	ttctagctca	300
gatttttctc	ccaaattctg	caatagaaga	tcacaatgtg	aactctgcat	ctccatgtta	360
aagtctaattg	gacattcaca	cttagcatgt	ctcaaagaaa	tctcatgtaa	accatgg	417

<210> 45
 <211> 494
 <212> DNA
 <213> Homo sapien

<400> 45						
cgcggtgctg	tggtatgtgt	acacgtgcat	gttctgcatg	tctgtaggtc	acacatgctt	60
tggtgcatgt	acacgtgtgt	gtgtgtatgc	gtgtaggagc	tcacacttgt	gtacacgttt	120
gtgtgcatgc	atgtgtgcag	gagcttgcac	gtttgtggtg	ggtacatgta	catatgtgag	180
tgatcctgtg	tgcaagcccc	catgtggaca	tggctatgag	tgagcgtgga	gccaaaagcc	240
aggtaacacg	catgcagcag	gccactgtg	cgtgtctgag	acggtctgtg	gcagggactg	300
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gtgtgaatca	gtgaccgtgt	ctctgaccaa	catgtgtaat	tacaaattga	taatttatta	420
acctgtgcag	caacaaataa	gatttttcaa	aactcaacaa	agtgtctcaa	gttgacatta	480
cttgcttcaa	agtt					494

<210> 46
 <211> 516
 <212> DNA
 <213> Homo sapien

<400> 46

ccagtccaac	ctgtctctca	ttattgtata	aatgagcaga	atctatatgg	cggaacccag	60
cttctattgc	taattttgtg	acctccaaag	ctttacttct	cggaacctcc	tcctttggcc	120
gtcatttgat	cattcaactc	tttgtcagtg	gcaactcccc	ctattttggg	gtggtgggtt	180
gttactacac	agtgagcaca	aacatgggtg	tccaatacac	aggctcttcc	tgtcagggtg	240
caaccagaaa	gttcatctaa	cactgtgata	tttgcacctt	tcttgaacag	ttggtggctg	300
aagattcatt	tgatgaatcg	atttttcaaa	agagatgatt	cttggttctt	ccgagcgctc	360
agctctcccg	ccgagcttct	ttgagacgtc	ctcagggtgc	ctttgacgat	gcgtcctcca	420
ctttcacaca	ctctagcatt	ccttcactgg	ggtcttcatt	gccccacatt	gggcagccag	480
gaatgttggg	gtgatcagac	acaacaccag	gtcatg			516

<210> 47

<211> 459

<212> DNA

<213> Homo sapien

<400> 47

ccaattcaga	gtggcattct	gcattttctgt	ggcttccaag	tcttagaacc	tcaactgaca	60
tatagcattg	ggcacactcc	agcagacgcc	cgaattcaaa	tcctggaagg	atggaagaaa	120
cgcttgagga	atatttgagg	tgagacacca	ctgtattttg	ctccaagcag	cctctttgac	180
ctaaacttcc	aggcaggatt	cttaatgaaa	aaagaggtac	aggatgagga	gaaaaacaag	240
aaatttgccc	tttctgtggg	ccatcacttg	ggcaagtcca	tcccaactga	caaccagatc	300
aaagctagaa	aatgagattc	cttagcctgg	atttccttct	aacatgttat	caaactctgg	360
tatctttcca	ggcttccctg	acttgcttta	gtttttaaga	tttgtgtttt	tctttttcca	420
caaggaataa	atgagaggga	atcgaksaaa	aaaaaaaaa			459

<210> 48

<211> 430

<212> DNA

<213> Homo sapien

<400> 48

cctatattca	gccacagcct	ctgggagtg	tgctgataat	cggagcttgg	aattaccctt	60
tcgttctcac	cattcagcca	ctgataggag	ccatcgctgc	aggaaatgct	gtgattataa	120
agccttctga	actgagtga	aatacagcca	agatcttggc	aaagcttctc	cctcagtatt	180
tagaccagga	tctctatatt	gttattaatg	gtggtgttga	ggaaaccacg	gagctcctga	240
agcagcgatt	tgaccacatt	ttctatacgg	gaaacactgc	ggttggcaaa	attgtcatgg	300
aagctgctgc	caagcatctg	accctgtga	ctcttgaact	gggagggaaa	agtccatgtt	360
atattgataa	agattgtgac	ctggacattg	tttgcagacg	cataacctgg	ggaaaatata	420
tgaattgtgg						430

<210> 49

<211> 288

<212> DNA

<213> Homo sapien

<400> 49

ccatccgaag	caagattkca	gatggcagtg	tgaagagaga	agacatattc	tacacttcaa	60
agctttggwg	caattcccat	cgaccagagt	tggtccgacc	agccttggaa	aggctcactga	120
aaaatcttca	attggattat	gttgacctct	accttattca	ttttccagtg	tctgtaaagc	180
caggtgagga	agtgatccca	aaagatgaaa	atggaaaaat	actatttgac	acagtggatc	240
tctgtgccac	gtgggaggcc	rtggagaagt	gtaaatgatgc	aggattgg		288

<210> 50

<211> 411

<212> DNA

<213> Homo sapien

<400> 50

ccagagaatg	acattcatgt	ccccgtggat	cccttgcaga	gagtacatgg	agccactgcc	60
accagtgggtg	atggaaagca	ctgtcttctt	actccggaag	ggtcctttgt	catacatggc	120
agcgtaagtg	taagcaaact	ctcctatgaa	cactcgctca	aaccagcctt	tcagaatggc	180
agggactcca	aaccactgca	gggggaactg	gaatatcaca	aggtctgcgg	cttccagctt	240
cttttgttca	gccacaatat	ctgggctcag	atggccttct	ttataagcca	gaacagactc	300
ggcaggatac	tgaaagtctg	cagggtcctt	cagtttacct	gtgatgtcct	ttctggaaat	360
gatgggattg	aagttcatgg	catagaggtc	cgactccacc	acctcccatc	c	411

<210> 51

<211> 503

<212> DNA

<213> Homo sapien

<400> 51

gatatcttat	gattaaaaac	aaattaaatt	ttaaaacacc	tgaagatata	ttagaagaaa	60
ttgtgcaccc	tccacaaaac	atacaaagtt	taaaagtttg	gatctttttc	tcagcaggta	120
tcagttgtaa	ataatgaatt	aggggccaaa	atgcaaaacg	aaaaatgaag	cagctacatg	180
tagttagtaa	tttctagttt	gaactgtaat	tgaatattgt	ggcttcatat	gtattatttt	240
atattgtact	tttttcatta	ttgatggttt	ggactttaat	aagagaaatt	ccatagtttt	300
taatatccca	gaagtgaagc	aatttgaaca	gtgtattcta	gaaaacaata	cactaactga	360
acagaagtga	atgcttatat	atattatgat	agccttaaac	ctttttcctc	taatgcctta	420
actgtcaaat	aattataacc	ttttaagca	taggactata	gtcagcatgc	tagactgaga	480
ggtaaacact	gatgcaatta	aga				503

<210> 52

<211> 503

<212> DNA

<213> Homo sapien

<400> 52

gatatcttat	gattaaaaac	aaattaaatt	ttaaaacacc	tgaagatata	ttagaagaaa	60
ttgtgcaccc	tccacaaaac	atacaaagtt	taaaagtttg	gatctttttc	tcagcaggta	120
tcagttgtaa	ataatgaatt	aggggccaaa	atgcaaaacg	aaaaatgaag	cagctacatg	180
tagttagtaa	tttctagttt	gaactgtaat	tgaatattgt	ggcttcatat	gtattatttt	240
atattgtact	tttttcatta	ttgatggttt	ggactttaat	aagagaaatt	ccatagtttt	300
taatatccca	gaagtgaagc	aatttgaaca	gtgtattcta	gaaaacaata	cactaactga	360
acagaagtga	atgcttatat	atattatgat	agccttaaac	ctttttcctc	taatgcctta	420
actgtcaaat	aattataacc	ttttaagca	taggactata	gtcagcatgc	tagactgaga	480
ggtaaacact	gatgcaatta	aga				503

<210> 53

<211> 531

<212> DNA

<213> Homo sapien

<400> 53

tttttttttt	tttttaaaat	gaggatattt	tattattttca	ggtaattttc	ccagaggkga	60
gaatagtaca	tgggaaattc	tctttaggcc	aggcttagta	ttacagkggtg	gkgctcaagg	120
ccgcccatac	gaacagtgat	actctcccaa	cagatttcat	ccaccccgctc	tccactaact	180
tttgccataa	aaattcctct	gaattgtatc	ttcttgggaag	aagtaaatat	ctgttcgact	240
atacaaagaa	acagagaaac	cactcccatt	gcaatcaatc	ttcaagagag	ggagcaggca	300

agccgtgttc	tttctgctga	gttttataga	ctctgacaag	ctgtgaaata	aacataaaca	360
gaagacaaaa	cagtgccaca	aataagcagt	agatgaccct	gtgacaagac	ggcattgcag	420
aacaaagact	gacgttttaa	ggggagtcac	gcagagtaac	atgggaacac	aagcctgaca	480
acctggtcag	cttccactta	ctctagctcc	tttgaactct	caacactaaa	a	531

<210> 54
 <211> 450
 <212> DNA
 <213> Homo sapien

<400> 54						
ccatgggtgt	ctggagcwcc	ctgaaactgt	atcaaagtgt	tacatatattc	caaacatttt	60
taaaatgaaa	aggcactctc	gtgttctcct	cactctgtgc	actttgctgt	tgggtgtgaca	120
aggcatttaa	agatgtttct	ggcattttct	ttttatttgt	aaggtggtgg	taactatggt	180
tattggctag	aaatcctgag	ttttcaactg	tatatatcta	tagtttgtaa	aaagaacaaa	240
acaaccgaga	caaacccttg	atgctccttg	ctcggcggtg	aggctgtggg	gaagatgcct	300
tttgggagag	gctgtagctc	aggcggtgca	ctgtgaggct	ggacctgttg	actctgcagg	360
gggcatccat	ttagcttcag	gttgtcttgt	ttctgtatat	agtgacatag	cattctgctg	420
ccatcttagc	tgtggacaaa	ggggggtcag				450

<210> 55
 <211> 648
 <212> DNA
 <213> Homo sapien

<400> 55						
caacttcaac	cacagggtgc	tggasatgat	cctcarcaag	ccagggtctca	agtacaagcc	60
tgtctgcaac	caggtggaat	gtcatcctta	cttcaaccag	agaaaactgc	tggatttctg	120
caagtcaaaa	gacattgttc	tggttgccta	tagtgctctg	ggatcccacc	gagaagaacc	180
atgggtggac	ccgaactccc	cggtgctcct	ggaggaccca	gtccttttgt	ccttggcaaa	240
aaagcacaag	cgaaccccag	ccctgattgc	cctgcgtac	cagctrcagc	gtggggttgt	300
ggtcctggcc	aagagctaca	atgagcagcg	catcagacag	aacgtgcagg	tgtttgaatt	360
ccagttgact	tcagaggaga	tgaaagccat	agatggccta	aacagaaatg	tgcgatattt	420
gacccttgat	atttttgctg	gcccccttaa	ttatccattt	tctgatgaat	attaacatgg	480
agggcattgc	atgaggtctg	ccagaaggcc	ctgcgtgtgg	atggtgacac	agaggatggc	540
tctatgctgg	tgactggaca	catcgctctc	ggttaaatct	ctcctgcttg	gygayttcag	600
caagctacag	caaagcccat	tggccggaaa	aaatatcaag	ggtcaaat		648

<210> 56
 <211> 536
 <212> DNA
 <213> Homo sapien

<400> 56						
ctggcatgag	aatatttttt	tttttaagtg	cggtagtttt	taaactgttt	gtttttaaac	60
aaactataga	actcttcatt	gtcagcaaa	caaagagtca	ctgcatcaat	gaaagttcaa	120
gaacctcctg	tacttaaaca	cgattcgcaa	cgttctgtta	tttttttgt	atgtttagaa	180
tgctgaaatg	tttttgaagt	taaataaaca	gtattacatt	tttaaaactc	ttctctatta	240
taacagtcaa	tttctgactc	acagcagtga	acaaaccccc	actccattgt	atttggagac	300
tggcctccct	ataaatgtgg	tagcttcttt	tattactcag	tggacctgcc	cgggcggccg	360
ctcgaagccg	aattccagca	cactggcggc	cgttactagt	ggatccgagc	tcggtaccaa	420
gcttggccgt	aatcatggtc	atagctgttt	cctgtgtgaa	attgttatcc	gctcacaatt	480
ccacacaaca	tacgagccgg	aagcataaag	tgtaaagcct	ggggtgccta	atgagt	536

<210> 57 <211> 391

<212> DNA

<213> Homo sapien

<400> 57

aggaactact	gtcccagagc	tgaggcaagg	ggattttctca	ggtcatttgg	agaacaagtg	60
cttttagtagt	agtttaaagt	agtaactgct	actgtattta	gtgggggtgga	attcagaaga	120
aatttgaaga	ccagatcatg	gggtggtctgc	atgtgaatga	acaggaatga	gccggacagc	180
ctggctgtca	ttgctttctt	cctccccatt	tggacccttc	tctgccctta	catttttgtt	240
tctccatcta	ccaccatcca	ccagtctatt	tatttgccta	gttggatttc	atttcttctg	300
gaaaatttat	tgtttattgg	catgtgaccc	ttgactgatg	gcttcattag	cattytgttt	360
ttcttttttg	atccttaata	gaaaactcaa	t			391

<210> 58

<211> 455

<212> DNA

<213> Homo sapien

<400> 58

gaagacatgc	ttacttcccc	ttcaccttcc	ttcatgatgt	gggaagagtg	ctgcaaccca	60
gccctagcca	acgccgcacg	agagggagtg	tgccgagggc	ttctgagaag	gtttctctca	120
catctagaaa	gaagcgctta	agatgtggca	gcccctcttc	ttcaagtggc	tcttgtcctg	180
ttgccctggg	agttctcaaa	ttgctgcagc	agcctccacc	cagcctgagg	atgacatcaa	240
tacacagagg	aagaagagtc	aggaaaagat	gagagaagtt	acagactctc	ctgggcgacc	300
ccgagagctt	accattcctc	agacttcttc	acatggtgct	aacagatttg	ttcctaaaag	360
taaagctcta	gaggccgtca	aattggcaat	agaagccggg	ttccaccata	ttgattctgc	420
acatgtttac	aataatgagg	agcaggttgg	actgg			455

<210> 59

<211> 398

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(398)

<223> n = A,T,C or G

<400> 59

ctcagaggga	gcgtgcgggt	gtgctctttg	tgaaattcca	ccatggcgta	ccgtggccag	60
ggtcagaaaag	tgagaagggt	tatggtgcag	cccatcaacc	tcactttcag	atacttacia	120
aatagatcgc	ggattcaggt	gtggctctat	gagcaagtga	atatgcggat	agaaggctgt	180
atcattgggt	ttgatgagta	tatgaacctt	gtattagatg	atgcagaaga	gattcattct	240
aaaacaaagt	caagaaaaca	actngntcgg	atcatgctaa	aaggagataa	tattactctg	300
ctacaaagtg	tctccaacta	gaaatgatca	atgaagtgag	aaattgttga	gaaggatata	360
gtttgttttt	agatgtcctt	tgtccaatgt	gaacattt			398

<210> 60

<211> 532

<212> DNA

<213> Homo sapien

<400> 60

gacttctgag	acctggggca	cccgggcctt	tgccggcagct	actggcaggg	cctggccacc	60
tcataggact	cagttccctt	ctgaacactc	gggggacatg	ggcctctaac	tgccactct	120
gatatgcctg	ggtagccta	ggagggaagg	ctctgatttg	gatttctcca	gtcaaagctc	180

acagaaaaaa	acctggcact	ttgattttca	tgggatggtc	ctaacagggt	cagtcacctc	240
cgagcagttt	gggaacccag	tttcttgtcc	tgggccctca	ggtcagcctg	gctgaattag	300
gacccttcct	tggcacaggg	gtgagaaaaga	gcttggggaa	cgcttggcat	tatggagggc	360
tggaaggggc	tcaaccccga	tttggagaga	agtttgggat	ggagtgggcg	agagattgag	420
agagcgagca	ggaaaagagg	tcttggagcc	tgggactgat	ggtggataag	gcctggaaaag	480
aasatgacsa	ggaggaggag	agaggggaagt	gggtggatga	ggagcaggct	ga	532

<210> 61
 <211> 466
 <212> DNA
 <213> Homo sapien

<400> 61						
gcgacggcga	cgtctctttt	gactaaaaga	cagtgtccag	tgctccagcc	taggagtcta	60
cggggaccgc	ctcccgcgcc	gccaccatgc	ccaacttctc	tggcaactgg	aaaatcatcc	120
gatcggaaaa	cttcgaggaa	ttgctcaaaag	tgctgggggt	gaatgtgatg	ctgaggaaga	180
ttgctgtggc	tgcagcgtcc	aagccagcag	tggagatcaa	acaggagggga	gacactttct	240
acatcaaaac	ctccaccacc	gtgcgcacca	cagagattaa	cttcaagggt	ggggaggagt	300
ttgaggagca	gactgtggat	gggaggccct	gtaagagcct	ggtgaaatgg	gagagtgaga	360
ataaaatggt	ctgtgagcag	aagctcctga	agggagaggg	ccccaagacc	tcgtggacca	420
gagaactgac	caacgatggg	gaactgatcc	tgaccatgac	ggcgga		466

<210> 62
 <211> 548
 <212> DNA
 <213> Homo sapien

<400> 62						
ttttgaattt	acaccaagaa	cttctcaata	aaagaaaatc	atgaatgctc	cacaatttca	60
acataccaca	agagaagtta	atttcttaac	attgtgttct	atgattattt	gtaagacctt	120
caccaagtgc	tgatatcttt	taaagacata	gttcaaaaatt	gcttttgaaa	atctgtattc	180
ttgaaaatat	ccttggtgtg	tattaggttt	ttaaatacca	gctaaaggat	tacctactg	240
agtcatcagt	accctcctat	tcagctcccc	aagatgatgt	gtttttgctt	accctaagag	300
aggttttctt	cttattttta	gataattcaa	gtgcttagat	aaattatgtt	ttctttaagt	360
gtttatggta	aactctttta	aagaaaattt	aatatgttat	agctgaatct	ttttggtaac	420
tttaaatctt	tatcatagac	tctgtacata	tgttcaaatt	agctgcttgc	ctgatgtgtg	480
tatcatcggt	gggatgacag	aacaaacata	tttatgatca	tgaataatgt	gctttgtaaa	540
aagatttc						548

<210> 63
 <211> 547
 <212> DNA
 <213> Homo sapien

<400> 63						
tttccaaagc	ggagacttcc	gacttcctta	caggatgagg	ctgggcattg	cctgggacag	60
cctatgtaag	gccatgtgcc	ccttgcctta	acaactcact	gcagtgtctc	tcatagacac	120
atcttgcagc	atttttctta	aggctatgct	tcagtttttc	tttgtaagcc	atcacaagcc	180
atagtggtag	gtttgccctt	tggtagagaa	ggtaggttaa	agctggtgga	aaaggcttat	240
tgcattgcat	tcagagtaac	ctgtgtgcat	actctagaag	agtagggaaa	ataatgcttg	300
ttacaattcg	acctaatatg	tgcattgtaa	aataaatgcc	atatttcaaa	caaaacacgt	360
aattttttta	cagtatgttt	tattaccttt	tgatatctgt	tgttgcaatg	ttagtgatgt	420
tttaaaatgt	gatcgaaaat	ataatgcttc	taagaaggaa	cagtagtgga	atgaatgtct	480
aaaagatctt	tatgtgttta	tggcttgcag	aaggattttt	gtgatgaaag	gggatttttt	540
gaaaaat						547

<210> 64
 <211> 528
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(528)
 <223> n = A,T,C or G

<400> 64
 cacctmctcc cscwggcgc ttwctcsgac gccttgccca scgggcccgc cgacccccctg 60
 srccatggac cccgctcgcc csctggggmt gtygatkctg ctgcttttcc tgrckgaggc 120
 tgcactgggc gatgctgac argagccaac aggaaataac rcggagatct gkctcctgcc 180
 cctagactac kgaccctgcc kggccctact tytccgytac tactacgaca ggyacacgca 240
 gagctgccgc cwgttcctgk rckggggctg crasggcaac rccaacwatt yctacacckg 300
 kgaggmttrc gackatgctw gstggargat agaaaaagt cccaaasttt gccggctgma 360
 agtgaatgag gacnaccagg gtgaggggta cacagataag tatttcttta atctaakkwc 420
 catgacatgw gaaaaattct ttncgggtgg gngtcaccgg accggattga gaacangttt 480
 gcagatgang ctactgggat gggctcctgc rcacnaaaga aantatca 528

<210> 65
 <211> 547
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(547)
 <223> n = A,T,C or G

<400> 65
 kgaatgaasa acgaacgctg gaagtagaaa tagagcctgg ggtgagagac ggcattggagt 60
 acccctttat tggagaaggt gagcctcacg tggatgggga gcctggagat ttacggttcc 120
 gaatcaaagt tgtcaagcac ccaatatattg aaaggagagg agatgatttg tacacaaatg 180
 tgacagtctc attagttgag tctactgggtg gctttgagat ggatattact cacttggatg 240
 gtcacaaggt acatatattcc cgggataaga tcaccaggcc aggagcgaag ctatggaaga 300
 aaggggaagg gctccccaac ttgacaaca acaatatcaa gggctctttg ataatacatt 360
 ttgatgtgga ttttccaaaa gaacagttaa cagaggaagc gagagaangt atcaaacagc 420
 tactgaaaca agggtcagtg cagaaggtat acaatggact gcaaggatat tgagagtga 480
 taaaattgga ctttggttaa aataaagtga ataagcgata tttattatct gcaagggttt 540
 ttttgtg 547

<210> 66
 <211> 535
 <212> DNA
 <213> Homo sapien

<400> 66
 ggggaggtct acgcttctag agcttgagcc agcggggcga ccctgcagtg gcaggactcg 60
 gcaccgcgcc ctccaccgcc ggttggtggc ctgcgtgaca gtttctctcc gtcgacatcg 120
 aaaggaagcc ggacgtgggc gggcagagag cttcatcgca gtaggaatgg cagccccatc 180
 tatgaaggaa agacaggtct gctggggggc ccgggatgag tactggaagt gtttagatga 240
 gaacttagag gatgcttctc aatgcaagaa gttaagaagc tctttcgaat caagttgtcc 300

ccaacagtgg	ataaaatatt	ttgataaaaag	aagagactac	ttaaaattca	aagaaaaatt	360
tgaagcagga	caatttgagc	cttcagaaac	aactgcaaaa	tcctaggctg	ttcataaaga	420
ttgaaagtat	tctttctgga	cattgaaaaa	gctccactga	ctatggaaca	gtaatagttt	480
gaatcatagt	gaacatcaat	acttgttccc	tatatacgac	acttgataat	taaga	535

<210> 67
 <211> 527
 <212> DNA
 <213> Homo sapien

<400> 67						
at tt t c t g c c a	c t t a a t t c a a	a c a g t c a t a t	g c a g g t c g c t	t a a t t t a t t t	g t g c t t t t g t	60
t t c a t c t t c t	a c a a g g c c c t	c t t a g c t c t a	a a a c t g a c a	g t g g a a t a a g	g a a a t g t t t t	120
t c c a a a t c t g	c a t t g c c g g t	g a g a t c c t c a	a c a t c a g c a t	g t t g a g a t g g	a c c t c a a c c c	180
c a c c t c t a a c	c c t g a a a c a c	a c t a c t c g a t	a t t a t c t t a g	g t a t g t t t t a	g g g t t t a g t t	240
t g t a a a a t a a	t a a t t t a t t t	t t g a a g g a a a	t a t a a a a t a t	t a a a g a g t a a	t a a t a g c t a t	300
c a t t t t t t t a a	g a t t c a a t c t	a a a c a a a t g g	a c t c t t t t t t	t t t c c a t t t g	t g a t g t a g a t	360
a a g c a a g a c a	a t t t t g a t c a	t g a g t g g t g a	a a a g a g g a t c	a a a c t t g a c t	a t t c t t g c a a	420
t g g c a g t c c a	g c a a c a a g c c	t t t c a t t t a c	a t t a a a t t a t	a a c t t t t c a t	t c a t t c c t a a	480
a c c a a a c t t a	a a a t t c t g c t	t t c c t t t g a g	t a g a a g g t a t	t t a a c t t		527

<210> 68
 <211> 431
 <212> DNA
 <213> Homo sapien

<400> 68						
g g g a a a c t t c	a t g g g t t t c c	t c a t c t g t c a	t g t c g a t g a t	t a t a t a t g g a	t a c a t t t a c a	60
a a a a t a a a a a	g c g g g a a t t t	t c c c t t c g c t	t g a a t a t t a t	c c c t g t a t a t	t g c a t g a a t g	120
a g a g a t t t c c	c a t a t t t c c a	t c a g a g t a a t	a a a t a c t t t	g c t t t a a t t c	t t a a g c a t a a	180
g t a a a c a t g a	t a t a a a a a t a	t a t g c t g a a t	t a c t t g t g a a	g a a t g c a t t t	a a a g c t a t t t	240
t a a a t g t g t t	t t t a t t t g t a	a g a c a t t a c t	t a t t a a g a a a	t t g g t t a t t a	t g c t t a c t g t	300
t c t a a t c t g g	t g g t a a a g g t	a t t c t t a a g a	a t t t g c a g g t	a c t a c a g a t t	t t c a a a a c t g	360
a a t g a g a g a a	a a t t g t a t a a	c c a t c c t g c t	g w t c c t t t a g	t g c a a t a c a a	t a a a a c t c t g	420
a a a t t a a a a c	t					431

<210> 69
 <211> 399
 <212> DNA
 <213> Homo sapien

<400> 69						
g a c a c g g c g g	a c a c a c a c a a	a c a c a g a a c c	a c a c a g c c a g	t c c c a g g a g c	c c a g t a a t g g	60
a g a g c c c c a a	a a a g a a g a a c	c a g c a g c t g a	a a g t c g g g a t	c c t a c a c c t g	g g c a g c a g a c	120
a g a a g a a g a t	c a g g a t a c a g	c t g a g a t c c c	a g t g c g c g a c	a t g g a a g g t g	a t c t g c a a g a	180
g c t g c a t c a g	t c a a a c a c c g	g g g a t a a a t c	t g g a t t t g g g	t t c c g g c g t c	a a g g t g a a g a	240
t a a t a c c t a a	a g a g g a a c a c	t g t a a a a t g c	c a g a a g c a g g	t g a a g a g c a a	c c a c a a g t t t	300
a a a t g a a g a c	a a g c t g a a a c	a a c g c a a g c t	g g t t t t a t a t	t a g a t a t t t g	a c t t a a a c t a	360
t c t c a a t a a a	g t t t t g c a g c	t t t c a c c a a r	a a a a a a a a a			399

<210> 70
 <211> 479
 <212> DNA
 <213> Homo sapien

<400> 70

cgcgggcggag	ctgtgagccg	gcgactcggg	tccctgaggt	ctggattctt	tctccgctac	60
tgagacacgg	cggacacaca	caaacacaga	accacacagc	cagtcccagg	agcccagtaa	120
tgagagagccc	caaaaagaag	aaccagcagc	tgaaagtcgg	gacccacac	ctgggcagca	180
gacagaagaa	gatcaggata	cagctgagat	cccagggtgt	gggaagggaa	atgcgcgaca	240
tggaaggtga	tctgcaagag	ctgcatcagt	caaacaccgg	ggataaatct	ggatttgggt	300
tccggcgtca	aggtgaagat	aatacctaaa	gaggaacact	gtaaaatgcc	agaagcaggt	360
gaagagcaac	cacaagttta	aatgaagaca	agctgaaaca	acgcaagctg	gttttatatt	420
aggatatttg	acttaacta	tctcaataaa	gttttgcagc	tttcaccaa	aaaaaaaa	479

<210> 71

<211> 437

<212> DNA

<213> Homo sapien

<400> 71

ctcagcggct	gccaacagat	catgagccat	cagctcctct	ggggccagct	ataggacaac	60
agaactctca	caaaggacc	agacacagt	rgcaccatgg	gacagtgtcg	gtcagccaac	120
gcagaggatg	ctcaggaatt	cagtgatgtg	gagagggcca	ttgagaccct	catcaagaac	180
tttcaccagt	actccgtgga	gggtgggaag	gagacgtga	ccccttctga	gctacgggac	240
ctggtcacc	agcagctgcc	ccatctcatg	ccgagcaact	gtggcctgga	agagaaaatt	300
gccaacctgg	gcagctgcaa	tgactctaaa	ctggagtcca	ggagtctctg	ggagctgatt	360
ggagaagcgg	ccaagagtgt	gaagctggag	aggcctgtcc	gggggcactg	agaactccct	420
ctggaattct	tgggggg					437

<210> 72

<211> 561

<212> DNA

<213> Homo sapien

<400> 72

ggatgggtata	ctgtaaattc	agcatatgga	gataccatta	tcataccttg	ccgacttgac	60
gtacctcaga	atctcatgtt	tggcaaatgg	aaatatgaaa	agcccgatgg	ctccccagta	120
tttattgcct	tcagatcctc	tacaaagaaa	agtgtgcagt	acgacgatgt	accagaatac	180
aaagacagat	tgaacctctc	agaaaactac	actttgtcta	tcagtaatgc	aaggatcagt	240
gatgaaaaga	gatttgtgtg	catgctagta	actgaggaca	acgtgtttga	ggcacctaca	300
atagtcaagg	tgttcaagca	accatctaaa	cctgaaattg	taagcaaagc	actgtttctc	360
gaaacagagc	agctaaaaaa	gttgggtgac	tgcatttcag	aagacagtta	tccagatggc	420
aatatcacat	ggtacaggaa	tggaaaagt	ctacatcccc	ttgaaggagc	ggtggtcata	480
atTTTTTaaaa	aggaaatgga	cccagtgact	cagctctata	ccatgacttc	caccctggag	540
tacaagacaa	ccaaggctga	c				561

<210> 73

<211> 916

<212> DNA

<213> Homo sapien

<400> 73

ggagaaaata	aggtggagtc	ctacttgttt	aaaaaatatg	tatctaagaa	tgttctaggg	60
cactctggga	acctataaag	gcaggtat	cgggccctcc	tcttcaggaa	tcttctcgaa	120
gacatggccc	agtcgaaggc	ccaggatggc	ttttgctgcg	gccccgtggg	gtaggagggg	180
cagagagaca	gggagagtca	gcctccacat	tcagaggcat	cacaagtaat	ggcacaattc	240
ttcggatgac	tgcaaaaaat	agtgttttgt	agttcaacaa	ctcaagacga	agcttatttc	300
tgaggataag	ctcttttaaag	gcaaaagctt	attttcatct	ctcatctttt	gtcctcctta	360
gcacaatgta	aaaaagaata	gtaatatcag	aacagggaag	aggaatggct	tgctggggag	420

cccatccagg	acactgggag	cacatagaga	ttcacccatg	tttggtgaac	ttagagtcac	480
tctcatgctt	ttctttataa	ttcacacata	tatgcagaga	agatatgttc	ttgttaacat	540
tgtatacaac	atagcccca	atatagtaag	atctatacta	gataatccta	gatgaaatgt	600
tagagatgct	atatgataca	actgtggcca	tgactgagga	aaggagctca	cgcccagaga	660
ctgggctgct	ctcccggagg	ccaaacccaa	gaaggctctg	caaagtcagg	ctcagggaga	720
ctctgccctg	ctgcagacct	cggtgtggac	acacgctgca	tagagctctc	cttgaaaaca	780
gaggggtctc	aagacattct	gcctacctat	tagcttttct	ttattttttt	aacttttttg	840
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tttaccatta	aaaaaa					916

<210> 74
 <211> 547
 <212> DNA
 <213> Homo sapien .

<400> 74						
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gagatatggc	ctttaactga	cctaaagagg	tgtgtgtgga	tttaattttt	tcccgttcct	120
ttttcttcag	taaaccaca	aatagtctaa	ccttaaaaaa	tgagttgatg	tccttatagg	180
tcactacccc	taaataaacc	tgaagcagg	gttttctctt	ggacatacta	aaaaatacct	240
aaaaggaagc	ttagatgggc	tgtgacacaa	aaaattcaat	tactgtcatc	taatgccagc	300
tgttaaaagt	gtggccactg	agcatttgat	tttataggaa	aaaatagtat	ttttgagaat	360
aacatagctg	tgctattgca	catctgttgg	aggacatccc	agatttgctt	atactcagtg	420
cctgtgatat	tgagtttaag	gatttgaggc	aggggtaatt	attaaacata	ttgcttctat	480
tcttgaaaaa	atagaagkgt	aaaatgttaa	taatacaaat	gtcactgtga	cctcctccac	540
tgagagg						547

<210> 75
 <211> 793
 <212> DNA
 <213> Homo sapien

<400> 75						
tgaggaagtt	gcaagccaac	aaaaaagttc	aaggatctag	aagacgatta	aggggaaggtc	60
gttctcagtg	aaaatccaaa	aaccagaaaa	aatgttttat	acaaccctaa	gtcaataacc	120
tgaccttaga	aaattgtgag	agccaagttg	acttcaggaa	ctgaaacatc	agcacaaga	180
agcaatcatc	aaataattct	gaacacaaa	ttaatatttt	tttttctgaa	tgagaaacat	240
gagggaaatt	gtggagttag	cctcctgtgg	agttagcctc	ctgtggtaaa	ggaattgaag	300
aaaatataac	accttacacc	ctttttcatc	ttgacattaa	aagttctggc	taactttgga	360
atccattaga	gaaaaatcct	gtcaccaga	ttcattacaa	ttcaaatcga	agagttgtga	420
actgttatcc	cattgaaaag	accgagcctt	gtatgtatgt	tatggatata	taaaatgcac	480
gcaagccatt	atctctccat	gggaagctaa	gttataaaaa	taggtgcttg	gtgtacaaaa	540
ctttttatat	caaaaaggctt	tgacattttc	tatatgagtg	ggtttactgg	taaattatgt	600
tattttttac	aactaatttt	gtactctcag	aatgtttgtc	atatgcttct	tgcaatgcat	660
attttttaat	ctcaaacgtt	tcaataaaac	catttttctc	atataaagag	aattacttca	720
rattgagtaa	ttcagaaaaa	ctcaagattt	aagttaaaaa	gtgggttgga	cttggaaca	780
ggactttata	cct					793

<210> 76
 <211> 461
 <212> DNA
 <213> Homo sapien

<400> 76						
accttgcaact	attccccctca	gtccatctat	cgaggtcttt	gcaggaagca	tactgggaat	60

tgaaacgaga	gcctaaatga	catctaagaa	aggcagtgtt	caataccagg	tattaggtga	120
ggatgggatt	ctaaggacat	cagtgggagg	cagggagcca	ccttcagacc	tcagcatgga	180
agcttccaag	atccagagga	agaggcaaca	gcactgagag	tcataggtag	aagaatcatc	240
acagccctgc	taaccaggca	gctgatgccc	ctctcccttg	gctccctgtg	tccaaatcct	300
acaggggcat	ctgttggctg	aactcaacct	gaagccaaag	agaagatgag	tggagagagg	360
caacatttat	agagctcagg	tttctagggc	tggagaggga	tctggaggga	cacacaggag	420
acacctggca	taaccaaaaa	atgattaaaa	aaaaaaaaaa	a		461

<210> 77

<211> 642 <212> DNA

<213> Homo sapien

<400> 77

ggttgcacga	aacacactgg	ggaatggagc	aaaacagtct	ttgaatatcg	aacacgcaag	60
gctgtgagac	tacctattgt	agatattgca	ccctatgaca	ttgggtggtcc	tgatcaagaa	120
tttgggtgtg	acgttggccc	tgtttgcttt	ttataaaacca	aactctatct	gaaatcccaa	180
caaaaaaaat	ttaactccat	atgtgttcct	cttgttctaa	tcttgtcaac	cagtgcaagt	240
gaccgacaaa	attccagtta	tttatttcca	aaatgtttgg	aaacagtata	atttgacaaa	300
gaaaaatgat	acttctcttt	ttttgctgtt	ccaccaaata	caattcaaata	gctttttgtt	360
ttattttttt	accaattcca	atttcaaaat	gtctcaatgg	tgctataata	aataaacttc	420
aacactcttt	atgataacaa	aaaaaarawa	wattctttga	atcctagccc	atctgcagag	480
caatgactgt	gctcaccagt	aaaagataac	ctttctttct	gaaatagtca	aatacgaaat	540
tagaaaagcc	ctccctattt	taactacctc	aactggtcag	aaacacagat	tgtattctat	600
gagtcccaga	agatgaaaaa	aattttatac	gttgataaaa	ct		642

<210> 78

<211> 519

<212> DNA

<213> Homo sapien

<400> 78

gcagaagaag	aagcggacct	tccgcaagtt	cacctaccgc	ggcgtggacc	tcgaccagct	60
gctggacatg	tcctacgagc	agctgatgca	gctgtacagt	gcgcgccagc	ggcggcggct	120
gaaccggggc	ctgcggcgga	agcagcactc	cctgctgaag	cgcctgcgca	aggccaagaa	180
ggaggcgccg	cccatggaga	agccggaagt	ggtgaagacg	cacctgcggg	acatgatcat	240
cctacccgag	atggtgggca	gcatggtggg	cgtctacaac	ggcaagacct	tcaaccaggt	300
ggagatcaag	cccagagatga	tccggcacta	cctgggcgag	ttctccatca	cctacaagcc	360
cgtaaagcat	ggccggcccc	gcatcggggc	cacccactcc	tcccgccttc	tccctctcaa	420
gtaatggctc	agctaataaa	aggcgcacat	gactccaaaa	aaaaaaaaaa	aaggcgggcc	480
gccaccgcgg	gggagctcca	cttttgttcc	ctttaatga			519

<210> 79

<211> 526

<212> DNA

<213> Homo sapien

<400> 79

gtctggaggc	ggtgtcctct	ccgccctgtc	gggtcctgga	tgagtacgag	ttatggtcac	60
ggtcacagcc	tgatctctta	tgtgttcata	gccattcgct	ctcccatcag	aactgtttgt	120
cctgaatgtg	ttcctctagt	tctagaaaat	gaccactaat	ttaaaaaact	cggttgtgag	180
gtttgcccag	aggcacttgt	tccagaattt	cccctcctgc	ttcagccatg	tccttgtcac	240
ttggcattct	aagctaaagc	tttagcttcc	caattcgtga	tgtgctaggc	caagattcgg	300
gagctgttgc	cagcctcgtc	aaatatggaa	gagaaacaac	ctgcgggtcaa	aaggagtgga	360
tttgtaagt	ggtgcgcgtc	tatctcataa	ctagatgtac	caaccaggga	agggccaagg	420
atggaaaagg	gtaacttttg	tgcttccaaa	gtagctaagc	agaagtgggg	gagcagttta	480

gccagatgat ctttgattag gcaaacattg agtttttaaag aggctg 526

<210> 80
 <211> 281
 <212> DNA
 <213> Homo sapien

<400> 80
 gttatattag tgggtagtgt aacattttat ccagggttggg gtgagggggag atggccacag 60
 tagcaagtgg tgacactaaa taccattttg aaggctgatg tgtatataca tcattactgt 120
 ccgtagcaat gaaggataca gtactgtgtt gtgggtgagt gttgctattg cccagcatta 180
 atatttgggt gtgtatgttt gaggctatga aacacgcagg agtggtttttg tgctattaat 240
 ttttaagagaa agcagctttt tcttaaaatt cactgttgag a 281

<210> 81
 <211> 405
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(405)
 <223> n = A,T,C or G

<400> 81
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 tagcaaaccg agcgatcatg tcgcacaaac aaatttacta ttcggacaaa tacgacsacg 120
 aggagtttga statcgacat gtcagtctgc ccaaggacat akccaasctg gtccctaaaa 180
 cccatctgat gtctgaatct gaatggagga atcttggcng ttcagmagan tcagggatgg 240
 gtccattata tgatccatga nccagaacct cdcactttgc tgttccggcg scccacttac 300
 cccaanaaac caamgaaatg aaccttggct actacttttc aatcctcaaa kcttttcaca 360
 vhtgaccttc cttcctaaca ttctttmtga taaacattta ttaag 405

<210> 82
 <211> 547
 <212> DNA
 <213> Homo sapien

<400> 82
 tagtttttaa gaagaaatth tttttggcct atgaaattgt taaacctgga acatgacatt 60
 gtaaatcata taataatgat tcttaaatgc tgtatggttt attatttaaa tgggtaaagc 120
 catttacata atatagaaag atatgcatat atctagaagg tatgtggcat ttatttggat 180
 aaaatttctca attcagagaa atcatctgat gtttctatag tcactttgcc agctcaaaaag 240
 aaaacaatac cctatgtagt tgtggaagt ttagtctaata ttgtgtaact gatattaaac 300
 ctaaatgttc tgccaccct gttggtataa agatattttg agcagactgt aaacaagaaa 360
 aaaaaaatca tgcattctta gcaaaattgc ctagtatgtt aatttgctca aaatacaatg 420
 tttgatttta tgcactttgt cgctattaac atcctttttt tcatgtagat ttcaataatt 480
 gagtaatttt agaagcatta ttttaggaat atatagtkgt cacagtaa atcttgtttt 540
 ttctatg 547

<210> 83
 <211> 529
 <212> DNA
 <213> Homo sapien

<400> 83

ctatttctaag	agatgctctt	agtgatcttg	cattacactt	tctgaataaa	atgaagatca	60
tggtgattaa	ggatattgaa	agagaagaca	ttgaattcat	ttgtaagaca	attggaacca	120
agccagttgc	tcatattgac	caatttactg	ctgacatgct	gggttctgct	gagtttagctg	180
aggaggtcaa	tttaaattgg	tctggcaaac	tgctcaagat	tacaggctgt	gccagccctg	240
gaaaaacagt	tacaattggt	gttcgtgggt	ctaacaaact	ggtgattgaa	gaagctgagc	300
gtccatttca	tgatgcccta	tgtgttattc	gttggttagt	gaagaagagg	gctcttattg	360
caggaggtgg	tgctccagaa	atagagttgg	ccctacgatt	aactgaatat	tcacgaacac	420
tgagtggat	ggaatcctac	tgcttcgtg	cttttgaga	tgctatggag	gtcattccat	480
ctacactagc	tgaaaatgcc	cggcctgaat	cccatttcta	cagtaacag		529

<210> 84

<211> 527

<212> DNA

<213> Homo sapien

<400> 84

cccattacca	gaatcccttc	atgggagggg	tggtgcctg	ttgaaactca	ctgacctatt	60
ggactgacgc	tggggtggta	tcttcacag	agctattgta	agtcaccaa	aaggcttctg	120
acgaaagaac	aattttttaa	aagtcctct	tttcaatcaa	gccaatgtcc	tattttattt	180
ctaaaagt	tgggactcgt	gctgttatca	agtacaatga	aaatggcttt	ataaatagct	240
gttttgacat	tgtgatagaa	ggcttgaata	cggaggaaag	atgtcgctgg	agctagtcct	300
gagttccgac	tgctccctgtg	gtgggaatcc	agtctgggaa	agcaggactg	ttttagcaaa	360
cgtgtactcg	ttctataaaa	atggaatctg	ttctgcaggt	taccgtccct	ccccgcccaa	420
gcacccctc	tgctctgtct	ctctgctgct	gggacccagg	gctttttcag	ctgcagaacc	480
cactggactt	ccaggaatca	aggaaaaagt	ggaaatgtcc	aactgtg		527

<210> 85

<211> 401

<212> DNA

<213> Homo sapien

<400> 85

cagtgtgggtg	gaattcccaa	gatagaaatg	aaaaactctt	ttatagagtg	ctgacatctg	60
acattgagaa	attcatgcct	attgtttata	ctcccactgt	gggtctggct	tgccaacaat	120
atagtttgggt	gtttcggaag	ccaagagggtc	tctttattac	tatccacgat	cgagggcata	180
ttgcttcagt	tctcaatgca	tggccagaag	atgtcatcaa	ggccattgtg	gtgactgatg	240
gagagcgat	tcttggttg	ggagaccttg	gctgtaattg	aatgggcatc	cctgtgggtg	300
aattggctct	atatacagct	tgcggagggg	tgaatcctca	agaatgtctg	cctgtcattc	360
tggtgtggg	aaccgaaaat	gaggagtta	ctaaagatcc	a		401

<210> 86

<211> 547

<212> DNA

<213> Homo sapien

<400> 86

gaagcctctt	gtgtttgtgt	gcagagaagt	atatgatcca	ccatgcta	gacacttgcc	60
tttttttcca	ccattaaggc	tttaagaaca	tgtggaataa	gttttttagc	tgctaatagac	120
aaaacaaatc	ctgtaactac	ccagccagca	agtatatagc	acagaacact	gtgttacttt	180
acaagggctt	atgtgactgg	aataagggtg	tcccacttga	ctgttccaaa	gagcagcttc	240
tcagatcttc	agtgttctac	ggtaaatttc	taacagtgtg	tttgtgtaaa	gtttgtcatt	300
tcatactcca	tacactacag	ttgctgtcac	tgatccctgt	tttgtcggct	tttaagctac	360
ttgggtcaaaa	atcctgcttc	cttaaaacat	agagaattaa	tgagcatctc	aagctttttc	420
ttttcctttt	taatgatgcc	tgactatca	agagtattct	agtgttctct	ctttgtttgg	480

catataatca tgcaccaaac tttttatttc ttttaagggtgg gagtatattc ttatttccta 540
aatgccca 547

<210> 87
<211> 530
<212> DNA
<213> Homo sapien

<400> 87
atggattcga aataccagkg tgtgaagctg aatgatggtc acttcatgcc tgtcctggga 60
tttggcacct atgcgcctgc agaggttcct aaaagtaaag ctctagaggc cgtcaaattg 120
gcaatagaag ccgggttcca ccatattgat tctgcacatg tttacaataa tgaggagcag 180
gttggactgg ccattccgaag caagattgca gatggcagtg tgaagagaga agacatattc 240
tacacttcaa agctttggag caattcccat cgaccagagt tgggccgacc agccttggaa 300
aggctactga aaaatcttca attggactat gttgacctct atcttattca ttttccagtg 360
tctgtaaagc caggtgagga agtgatcca aaagatgaaa atggaaaaat actatttgac 420
acagtggatc tctgtgccac rtgggaggcc atggagaagt gtaaagatgc aggattggcc 480
aagtccatcg ggtgtgcca cttcaaccac aggtgctgg agatgatcct 530

<210> 88
<211> 529
<212> DNA
<213> Homo sapien

<400> 88
acctgagcta agaaggataa ttgtcttttg gtaactaggt ctacagggtt acatttttct 60
gtgttacact caaggataaa ggcaaaatca attttgtaat ttgtttagaa gccagagttt 120
atcttttcta taagtttaca gcctttttct tatatataca gttattgcca cctttgtgaa 180
catggcaagg gactttttta caatttttat tttattttct agtaccagcc taggaattcg 240
gttagtactc atttgtattc actgtcactt tttctcatgt tctaattata aatgaccaa 300
atcaagattg ctcaaaaggg taaatgatag ccacagtatt gctccctaaa atatgcataa 360
agtagaaatt cactgccttc ccctcctgtc catgaccttg ggcacaggga agttctggtg 420
tcatagatat cccgttttgt gaggtagagc tgtgcattaa acttgcacat gactggaacg 480
aagtatgagt gcaactcaaa tgtgttgaag atactgcagt catttttgt 529

<210> 89
<211> 547
<212> DNA
<213> Homo sapien

<400> 89
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cacacaagggt tatgattttt ttaattactg gcttctgatt tctttcactt ctgatccttt 120
tcctttttct cagatgtagc tgagtcttga tcattttaag acaacgatgg gtagaatttt 180
gagattaatg ttaattttcc ctttttggtt atttcagtc cctctcacta tgcttttgtc 240
cagaaggatc aagaattcta ccattcccttg ggtctttgtg tataaacaat gttaaataaa 300
ggtagactca gtctttaaga tattagacag tttttttagt ccatgggatt gtaaataata 360
acattaactt tcctataaga atattttggc ttttgtaatc atagcctcaa attgggtatt 420
attatggatt cactagacaa acagctgttt ccttattgtc ttttttcttt agtgtttctg 480
atttgctatc agtagctgtt tttaaagcca tccaaggaaa ataattattt acagtttttg 540
aagtcac 547

<210> 90
<211> 528
<212> DNA

<213> Homo sapien

<400> 90

gagcagcaga	agctgtacag	caagatgac	gtggggaacc	acaaggacag	gagccgctcc	60
tgagcctgcc	tccagctggc	tggggccacc	gtgcgggggtg	ccaacgggct	cagagctgga	120
gttgccgccc	ccgccccac	tgctgtgtcc	tttccagact	ccagggctcc	ccgggctgct	180
ctggatccca	ggactccggc	tttcgccgag	ccgcagcggg	atccctgtgc	acccggcgca	240
gcctaccctt	ggtggtctaa	acggatgctg	ctgggtgttg	cgaccagga	cgagatgcct	300
tgtttctttt	acaataagtt	gttggaggaa	tgccattaaa	gtgaactccc	cacctttgca	360
cgctgtgcgg	gctgagtgg	tggggagatg	tggccatgg	cttgtgctag	agatggcggt	420
acaagagtct	gttatgcaag	cccgtgtgcc	agggatgtgc	tgggggcggc	caccgctct	480
ccaggaaagg	cacagctgag	gcactgtggc	tggcttcggc	ctcaacat		528

<210> 91

<211> 547

<212> DNA

<213> Homo sapien

<400> 91

atataccatt	taatacattt	acactttctt	atttaagaag	atattgaatg	caaaataatt	60
gacatataga	actttacaaa	catatgtcca	aggactctaa	attgagactc	ttccacatgt	120
acaatctcat	catcctgaag	cctataatga	agaaaaagat	ctagaaactg	agttgtggag	180
ctgactctaa	tcaaatgtga	tgattggaat	taraccmttt	ggscyttgra	ccttymtwrg	240
raaaawgrmc	cmacccttyt	taacmtgrac	cwccytmatc	tctagaagct	gggatggact	300
tactatyctk	gttwatattt	taaatackga	aaggtgctat	gcttctgtta	ttattccaag	360
actggagata	ggcagggcta	aaaagggtatt	attatttttc	ctttaatgat	ggtgctaaaa	420
ttcttcctat	aaaattcctt	aaaaataaag	atggtttaat	cactaccatt	gtgaaaacat	480
aactgttaga	cttcccgttt	ctgaaagaaa	gagcatcggt	ccaatgcttg	ttcactgttc	540
ctctgtc						547

<210> 92

<211> 527

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(527)

<223> n = A,T,C or G

<400> 92

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ttggggtaac	aggatgggta	cctgtcacgg	cctgtgcaaa	cataacatgt	gtcaccacac	120
tgaaggatg	gtggaacaag	tggcctcacc	aaggctcggac	cccaatggac	tttttgctc	180
ttgggagctt	atgggtctat	gaggacacag	tagcctttcc	tatcagcaaa	ctggagtgga	240
tggtgtatct	gggggtggcc	ttatgtacct	gctactgttc	tccccacatt	gcccagatgc	300
ctgtataact	gggaggcact	gkgctctcag	tttttgcgaa	tgtgatgagc	cccctggtgt	360
ttctaccctt	ttggcaatga	ctatccctgg	agncatgtgt	caaaactgta	aagcacaatt	420
tactgtctct	tgcggagcac	accgtcatg	ctctgaatta	cacctgaktg	tccctcctcc	480
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<210> 93

<211> 531

<212> DNA

<213> Homo sapien

<400> 93

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ttacacaatg	aagggtttcaa	gctgtttgcc	acggaagcca	catcagactg	gctcaacgcc	180
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tcttccatca	gaaaattgat	tagagatggc	agcattgacc	tagtgattaa	ccttcccaac	300
aacaacacta	aatttgtcca	tgataattat	gtgattcgga	ggacagctgt	tgatagtgga	360
atccctctcc	tcactaattt	tcaggtgacc	aaactttttg	ctgaagctgt	gcagaaatct	420
cgcaagggtgg	actccaagag	tctttccac	tacaggcagt	acagtgctgg	aaaagcagca	480
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<210> 94

<211> 547

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(547)

<223> n = A,T,C or G

<400> 94

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gatgtgtctc	cattcctgga	aggtcttgaa	gaaagaccac	agagaaaggc	acagcctgct	180
caacctgctg	atgaacctgc	agaaaaggct	gatgaaccaa	tggaacatta	agtgataagc	240
cagtctatat	atgtattatc	aaatatgtaa	gaatacaggc	accacatact	gatgacaata	300
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agatgtgagt	tttttccaag	caacctcact	gaaacctata	taatggaata	catttttctt	420
tgaaagggtc	tgtataatca	ttttctagaa	agtatgggta	tctatactaa	tgtttttata	480
tgaagaacat	aggtgtcttt	gtggttttta	agacaactgt	gaaataaaaat	tgtttcaccg	540
cctggtn						547

<210> 95

<211> 1265

<212> DNA

<213> Homo sapien

<400> 95

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ccaagaaagg	aggaaaagct	gatttttgtg	aacgtcgcta	cttgtgcctg	aactaactct	180
caggcacatt	agtcagaaaa	tactacctat	ggttactccc	ccaggttcct	aaaagtaaag	240
cttttagaggc	caccaaattg	gcaattgaag	ctggcttcgc	ccatattgat	tctgtctatt	300
tatacaataa	tgaggagcag	gttggactgg	ccatccgaag	caagattgca	gatggcagtg	360
tgaagagaga	agacatatcc	tacacttcaa	agctttgggtg	caattcccat	cgaccagagt	420
tgggtccgacc	agccttggaa	aggtcactga	aaaatcttca	attggattat	gttgacctct	480
accttattca	ttttccagtg	tctgtaaagc	cagggtgagga	agtgatccca	aaagatgaaa	540
atggaaaaat	actatttgac	acagtggatc	tctgtgccac	gtgggaggcc	gtggagaagt	600
gtaaagatgc	aggattggcc	aagtccatcg	gggtgtccaa	cttcaaccgc	aggcagctgg	660
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cccctaatta	tccattttct	gatgaatatt	aacatggagg	gcattgcatg	aggtctgcca	1140
gaaggccctg	cgtgtggatg	gtgacacaga	ggatggctct	atgctgggtg	ctggacacat	1200
cgctcttggt	taaatctctc	ctgcttggtg	atttcagcaa	gctacagcaa	agcccattgg	1260
ccaga						1265

<210> 96
 <211> 568
 <212> DNA
 <213> Homo sapien

<400> 96						
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aaagtgtctc	agaaattgtc	agtggtttac	atgaagtggc	catgggtgtc	tggagcacc	120
tgaactgtga	tcaaagtgtg	acatatttcc	aaacattttt	aaaatgaaaa	ggcactctcg	180
tgttctcctc	actctgtgca	ctttgctgtt	gggtgtgacaa	ggcattttaa	gatgtttctg	240
gcattttctt	tttatttgta	aggtgggtgg	aactatggtt	attggctaga	aatcctgagt	300
tttcaactgt	atatatctat	agtttgtaaa	aagaacaaaa	caaccgagac	aaacccttga	360
tgtccttgc	tcggcgttga	ggctgtgggg	aagatgcctt	ttgggagagg	ctgtagctca	420
gggcgtgcac	tgtgaggctg	gacctgttga	ctctgcaggg	ggcatccatt	tagcttcagg	480
ttgtcttggt	tctgtatata	gtgacatagc	attctgctgc	catcttagct	gtggacaaa	540
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<210> 97
 <211> 546
 <212> DNA
 <213> Homo sapien

<400> 97						
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ttgtatttta	aacaacaaa	aagaattgta	aggggtggctt	gctgccaggc	ttgcactgcc	180
gttcctgggg	gtgtgcatct	tcgggaaagg	tgggtggcggg	gcgtccacta	ggtttctctg	240
cccctgctgc	tccttccgta	agaaaatgaa	atattctatg	cctaatactc	acacgcaaca	300
tttctgttac	tttgaagtc	gtttgcgaga	atgcagacca	cctcactaaa	ctgtaaacgg	360
taaagagatt	tttacttttg	gtctccgtga	gtcgcacatc	tactaagggt	tacacaggaa	420
ttccacctga	agacttgtgt	taaagtctta	cagcgcgcac	tgtaactga	acgtcttttt	480
cttcagccta	tacgcggatc	cttgttttga	gctctcagaa	tcactcagac	aacattttgt	540
aactgc						546

<210> 98
 <211> 547
 <212> DNA
 <213> Homo sapien

<400> 98						
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aaccaaccta	gaatcacata	gcaaagtaca	gaagccagag	gcctcccaag	tctctctaac	180
tccaaacctt	atgcttactc	tactatatca	cactaccttg	caataggaca	aagggaaat	240
gtggtaaaact	atgttcccag	catctaaaag	ccaggagtgg	ttttcatttt	tctttaagaa	300
gatgatagtg	tgatttgaaa	catatctgaa	tttcagaaga	ggggactttt	aaaaattgcc	360
actcataagg	aaagaaagaa	ctttttcaca	tatttttgaa	agaaacgatg	gtgagaagat	420

attcttgata atagagatat gctaacattt gctttgggtg tttttaggt tagatttttt	480
tggtgtgtac tttataggct tgcatttgc ttactttaaa cagctgaagt tctaagtaag	540
agtgttc	547

<210> 99
 <211> 122
 <212> DNA
 <213> Homo sapien

<400> 99	
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gcaggcccca cctgccaata gtaataaagc aatgtcactt ttttaaaaca aaaaaaaaaa	120
aa	122

<210> 100
 <211> 449
 <212> DNA
 <213> Homo sapien

<400> 100	
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ggggatgtgc taaagcgtga aatcagttgt ccttaatttt tagaaagatt ttggtaacta	120
ggtgtctcag ggctgggttg gggcctcaag tgtaaggacc ccctgccctt agtggagagc	180
tgagagcttg agacattacc ccttcattcag aaggaatttt cggatgtttt cttgggaagc	240
tgttttggtc cttggaagca gtgagagctg ggaagcttct tttggctcta ggtgagttgt	300
catgcggtga agttgaggtt atcttgggat aaagggtctt ctagggcaca aaactcactc	360
taggtttata ttgtatgtag cttatatttt ttactaaggt gtcaccttat aagcatctat	420
aaattgagtt ctttttctta gttgtatgg	449

<210> 101
 <211> 131
 <212> DNA
 <213> Homo sapien

<400> 101	
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catccagatc tttacctgg ccctgtcttg gagaatctgt tttcaatctc cactgattgc	120
ccccttgctg g	131

<210> 102
 <211> 199
 <212> DNA
 <213> Homo sapien

<400> 102	
ctgctgcgcc tgatgctggg acagccccgc tcccagatgt aaagaacgag acttccacaa	60
acctggattt tttatgtaca accctgaccg tgaccgtttg ctatattcct ttttctatga	120
aataatgtga atgataataa aacagctttg acttgaaaaa aaaaaaaaaa aaaaaaaaaa	180
aaaaaaaaaa aaaaaaaaaa	199

<210> 103
 <211> 321
 <212> DNA
 <213> Homo sapien

<400> 103

tttttttaggt	ttttaaactt	tttatttgca	tattaaaaaa	attgtgcatt	ccaataatta	60
aaatcatttg	aacaaaaaaa	aatggcactc	tgattaaact	gcattacagc	ctgcaggaca	120
ccttgggcca	gcttggtttt	actctagatt	tcactgtcgt	cccaccccca	cttctttcac	180
cccacttttt	ccttcaccaa	catgcaaagt	ctttccttcc	ctgccaccca	gataatatag	240
acagatggga	aaggcaggcg	cggccttcgt	tgtcagtagt	tctttgatgt	gaaaggggca	300
gcacagtcac	ttaaacttga	t				321

<210> 104

<211> 309

<212> DNA

<213> Homo sapien

<400> 104

tttttttttt	tttttatttt	tttttttgca	tcaaaaaact	ttatttccat	ttggcccaag	60
gcttggttagg	atagttaaaa	aagctgccta	ttggctggag	ggagaggctt	aggcaaaacc	120
cctattactt	tgcaaggggc	ccttcaaaag	tctctgggct	tctatttcaa	ccgcgatgat	180
gtggctctgg	aaggcgtgag	ccactttttc	cgggaactgg	ccaaggaaaa	gccccagggc	240
tacaaccgtt	tcctgaaaat	gcaaaaccag	cggggcgggc	gcgctctttt	ccaggacatc	300
aaaaagcca						309

<210> 105

<211> 591

<212> DNA

<213> Homo sapien

<400> 105

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gttttaacct	aagcgctca	catgactaac	tcctcatcca	tcaagaatga	gctcagctct	120
cacttcccca	ctcctcacc	ccctgtaaag	taacctttct	ccaaggttat	gcttcaacag	180
gaatagctaa	catttattaa	attgtggcac	gtaagtatct	tggatatatt	ggctcattga	240
atcctcacac	ctactatttt	acagagatgc	cagtggggct	tgagattgaa	tcacttgccc	300
aggctcccac	tgctggtaaa	cagtagaggg	ggctcctgac	ccatcagtct	ggcttgacaa	360
cccattccct	caactgcgga	tcccggattc	ccttatcacc	ctggtgattt	ctccataggc	420
tgtggtaaca	ttgttgcat	gaatggaccg	ttgaaatagg	gcctggcagg	gagaaattca	480
ggaaatgaat	gaatggttct	tccttggcag	cctttgatga	cttacaagcc	ccttcaaggg	540
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<210> 106

<211> 450

<212> DNA

<213> Homo sapien

<400> 106

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ccactaaact	aattaagggtg	ttggcataac	ctgtcattga	attcaagtgt	ccaacaactg	120
tttgcttaaa	atatcattag	acctaataat	tttttcaaag	gcacaaagt	taaacatggg	180
gggggcgggt	gttgagaggg	gtctgggata	cccttaaac	caaaaaagt	atttgttccc	240
ccttgcccag	aagggtgact	gttccactgg	gcctgtcacc	acaggacatt	ttccatgaca	300
agcactcacc	ttcttgggga	aggggcatca	ggttggcaca	ggaaaggccc	aagtgagggg	360
ccactctgta	cattaatact	ttggtgatta	atgtttgggg	agaggcagga	ttctcaccca	420
cctttttgac	ttcaaact	ctcactcaag				450

<210> 107

<211> 116

<212> DNA

<213> Homo sapien

<400> 107

tcgacgaaag	ttactgtcac	tcagttgtaa	atccatcagc	ttttcacctg	ttaaaaattt	60
tgcaaaatat	acatgtttctc	ctcctgtttt	caattcttcc	atcttttttc	ttgagg	116

<210> 108

<211> 291

<212> DNA

<213> Homo sapien

<400> 108

ctgctcgaag	ttgtcaaaac	ccacgtgcag	ggcaatggag	agtccgatgg	ccgaccacag	60
cgagtagcgt	cctcccaccc	aatcccagaa	ctcgaacatg	ttttgagggg	caattccaaa	120
ctccttcact	ttgggttggt	tagtagacag	ggcaacaaag	tgcttcgcca	ctgcagtagg	180
atccttggcc	gcctggagaa	accactcctt	cgccgtctct	gcattcgtga	tggtctcctg	240
ggtagtaaag	gtcttggagg	caatgatgaa	cagggaggac	tcgggggttca	g	291

<210> 109

<211> 662

<212> DNA

<213> Homo sapien

<400> 109

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caccagaagt	gtgagaacgc	ctaccccggc	aacatcacag	acaccatggg	gtgtgccagc	120
gtgcaggaag	ggggcaagga	ctcctgccag	ggtgactccg	ggggccctct	ggtctgtaac	180
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ggtgtctaca	cgaaggtctg	caaatatgtg	gactggatcc	aggagacgat	gaagaacaat	300
tagactggac	cccccacca	cagcccatca	ccctccattt	ccacttgggt	tttgggtcct	360
gttcactctg	ttaataagaa	accctaagcc	aagaccctct	acgaacattc	tttgggcctc	420
ctggactaca	ggagatgctg	tcacttaata	atcaacctgg	ggttcgaaat	cagtgaagacc	480
tggattcaaa	ttctgccttg	aaatattgtg	actctgggaa	tgacaacacc	tggtttgttc	540
tctgttgtat	ccccagcccc	aaaagacagc	tcctggacct	tgccccgggg	cggcccgcctc	600
ggaaaggggg	cgaaatttct	tcaagaatat	ttccatttcc	acaaacttgg	ggccggggggc	660
cc						662

<210> 110

<211> 323

<212> DNA

<213> Homo sapien

<400> 110

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cgccaatata	agcaggaaat	ctgcagctcc	tctgctatgt	gcctcagaac	actttcaatt	120
tttctggtca	atgctctgat	taggtatcat	acataaaagc	cagcatatta	gtttaaatct	180
ctaacaaaaa	actatatattt	ccaaagtcat	tatcatttgg	gccaattaag	tgatcttttc	240
gtgctttgtt	gagcttcatc	tttagggcat	ctcttctttc	ttccatttca	tgaagttcgg	300
catttccatg	tgcaaattta	cag				323

<210> 111

<211> 336

<212> DNA

<213> Homo sapien

<400> 111

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ggggcctccc	ccatcccagc	ttctccacca	tcccagcaag	tcaggatatc	agacagtcct	120
cccctgaccc	tcccccttgt	agatatcaat	tcctaaacag	agccaaatac	tctatatcta	180
tagtcacagc	cctgtacagc	atttttcata	agttatatag	taaattggtc	gcatgatttg	240
tgcttctagt	gctctcattt	ggaaatgagg	caggcttctt	ctatgaaatg	taaagaaaga	300
aaccactttg	tatattttgt	aataccacct	ctgtgg			336

<210> 112

<211> 218

<212> DNA

<213> Homo sapien

<400> 112

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ctacatacac	acacgggtgg	ggaatgaacc	caaagttttt	aggtgaagtc	tctcagggcc	120
caccccgtag	cacagacctt	cctcggttgc	agagattctg	ggcaaagcat	ccgtgctctc	180
atgagattat	cctggggaga	tttagaagaa	ttttgtgg			218

<210> 113

<211> 533

<212> DNA

<213> Homo sapien

<400> 113

ctgcaccgac	agttgcgatg	aaagtcttaa	tctcttccct	cctcctgttg	ctgccactaa	60
tgctgatgtc	catggtctct	agcagcctga	atccaggggg	cgccagaggc	cacagggacc	120
gaggccaggc	ttctaggaga	tggctccaga	aaggcggcca	agaatgtgag	tgcaaagatt	180
ggttcttgag	agccccgaga	agaaaattca	tgacagtgtc	tgggctgcca	aagaagcagt	240
gccccgtgta	tcatttcaag	ggcaatgtga	agaaaacaag	acaccaaagg	caccacagaa	300
agccaaacaa	gcatcccaga	gcctgccagc	aatttctcaa	acaatgtcag	ctaagaagct	360
ttgctctgcc	tttgtaggag	ctctgagcgc	ccactcttcc	aattaaacat	tctcagccaa	420
gaagacagtg	agcacaccta	ccagacactc	ttcttctccc	acctcactct	cccactgtac	480
ccacccttaa	atcattccag	tgctctcaaa	aagcatgttt	ttcaagatct	aaa	533

<210> 114

<211> 261

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(261)

<223> n = A,T,C or G

<400> 114

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ggggacaaac	tgaagttaaa	caggctcgaaa	ctagaggagc	tgctgaccct	ggagctgacc	180
actttcttgg	ggaaaaggac	acatgaaggt	gctttgcaaa	agctgatgag	caatctggac	240
accaacatag	gacaacaacg	t				261

<210> 115

<211> 267

<212> DNA

<213> Homo sapien

<400> 115

cctctcctgt	gggttccaga	ccctgttcca	gcaacaattg	ctgggacacc	tggggccgact	60
gtctccacctc	gccaggccct	ggccctctcc	atctcagccc	tgacagccac	ccagtgataa	120
acacagcagg	cttcctaagc	aatgtgacgc	accagagggg	tgggtgtaca	cgttcccctt	180
gaagtcacat	gaaaattaga	gaacagattt	gcctcatagc	tgaagagaga	ccctattcca	240
agcatgaatg	gccttgacaa	tgttcct				267

<210> 116

<211> 239

<212> DNA

<213> Homo sapien

<400> 116

ctgatgacct	gggttctagt	gaaaatgcag	ggtcagattc	agtgggtctg	gggtctgaat	60
ctctaaggcg	ctgccaaagt	atgctgatgc	tcctggcttg	tggaccaccc	tgtgtatagc	120
aaagctctag	actaggaggt	ctcaaccttg	gctgcacaga	attatctggg	gagtttttaa	180
atttcccagt	gcccaggctg	cattcatatc	atagtagaga	caggggtttg	ccatgctgg	239

<210> 117

<211> 168

<212> DNA

<213> Homo sapien

<400> 117

aaaaaacttt	tatattgctg	catcttccac	agttcttttg	gtagtctctg	aacttaaaat	60
ttgtaggagt	tgtagactac	ctaaattttt	aagttatgga	tttgttcata	ggttgtaggg	120
gtaggtaaag	aaggaaacag	acaagaaaat	ggcttcttga	ggtggcag		168

<210> 118

<211> 150

<212> DNA

<213> Homo sapien

<400> 118

aaaaaaaaaga	gtttatattag	aaagtatcat	agtgtaaaca	aacaaattgt	accactttga	60
ttttcttgga	atacaagact	cgtgatgcaa	agctgaagtg	tgtgtacaag	actcttgaca	120
gttgtgcttc	tctaggaggt	tgggtttttt				150

<210> 119

<211> 154

<212> DNA

<213> Homo sapien

<400> 119

aaactgtgtg	agatattaac	cagccgccct	gttataaaat	caggaaatcc	aaacagcgat	60
ttacaccgat	taacaccccc	ttttatattt	tttcaaatac	actgagaaaa	taatcaaacy	120
ttttcatctc	tcttgtcttt	ttttgttttt	tcct			154

<210> 120

<211> 314

<212> DNA

<213> Homo sapien

<400> 120

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tccaaaataa	ttttcacccc	tctaagcatg	taaattcaaa	gatggatcct	tcatagaaat	120
taaaaaatca	atttgagctc	atttcgaata	cagaacaagt	atggcacaga	tggaagtcct	180
gccacgtttc	ctttaatgat	gctgactctt	gtatcacaca	ggccagcatg	aagttttctta	240
ctcagacttt	acaggcattt	tccgtaattc	aatcagtcct	gctcccagca	caacacagga	300
ggtgattcga	gaat					314

<210> 121

<211> 601

<212> DNA

<213> Homo sapien

<400> 121

aaaaaaaaacc	taattcattg	aagtaataac	caaataattt	tcaatcttga	ttcaactgtg	60
attcaaatct	tacaccattt	gccccttcta	tgaatttatg	tataaaattt	tttaagagtc	120
agagtttttt	tttcttgatt	aattggatgt	atttcacaga	atttccaact	gctcacgtta	180
gttttcttcc	ttttagagtt	gatctctcta	atgtattaga	tcttcatgcc	tttgatagtc	240
tctctggaat	aagtttgcag	aaaaaacttc	agcatgtgcc	aggaacacaa	cctcaccttg	300
atcagagtat	tgtacaatca	catttgacgt	accaggaaat	gcaaagggaag	aacatcttaa	360
tatgttttatt	cagaatcttc	tgtgggaaaa	gaatgtgaga	aacaaggaca	atcactgcat	420
ggaggtcata	aggctgaagg	gattggtgtc	aatcaacgac	aaatcacac	aagtgattgt	480
ccagggtgtc	catgagctct	gtgatctgga	ggagactcca	gtgagctgga	aggatgacac	540
tgagagaaca	aatcgattgg	tcctcattgg	cagaaattta	gataaggata	tccttaaaca	600
g						601

<210> 122

<211> 486

<212> DNA

<213> Homo sapien

<400> 122

ctgtttctaa	ttgcttttgt	gactgttacc	ttttagttca	tgcccccca	aagagctaaa	60
tttcacattt	ttacctacaa	aattgatttt	taattcctgc	aaataattta	ccattatgag	120
ctacaagggtg	ggcaacagcg	cctgaggatc	taattttatg	catattactc	ccaagtattt	180
taacacttgt	tggagaagca	atatctggat	caataaaaca	ctgtcccatc	aaccatttga	240
gtggggagag	ggagaagctc	ttctgttaagt	aagattctgg	caagctcttt	gaaatgagtc	300
ttctttccca	cagattttct	ctactctttc	aatacaaca	gataggagaa	gaggggaatag	360
aaacctggag	gaacttgaat	atttttgttc	tagatagaga	tacagttatt	gaaaaggaaa	420
cctagaaagt	agtcacacgt	cgcttattta	ggccagaagt	aattgtactg	ggcaaaaatt	480
tcactt						486

<210> 123

<211> 239

<212> DNA

<213> Homo sapien

<400> 123

ctggtgggtc	tttttttcc	ctcagagctc	aagcctgtag	tgcctgatgt	catttctttc	60
aagttgcca	cagtatctcc	acttaaacta	ggctagtaac	caaaataatg	tggaaccttc	120
ttaggaaaca	gtgtgggaga	ataggagtc	agccgtaaga	taaactggaa	atatttgggc	180
gtcttgatcc	tggctacgca	ccacctcagt	gttgttccta	cataaacaag	gcccccttt	239

<210> 124

<211> 610
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(610)
 <223> n = A,T,C or G

<400> 124
 ccancaagt cnttgatgat cactgacccn cgcgcgcctg ctggaccaag gtggctgcgg 60
 ggaaatcgcc acngngcttt cggttttctt ggtgaaggaa tacaccgcgc cgacagcagg 120
 ttttcagtca gggtcagggg ctggtgcttg cgcgcgaaaa tcaccggtac gccgaggttc 180
 aggcgggtca tgatcgccgg tgcaatgccc gaggcttcga tggtagcat cttggtgatg 240
 cccgaatcct tgaacaacgc agcgaattca tcaccgatca gtttcatcag cgccgggtcg 300
 atctgggtgt tcagaaaggc gtcgaccttg agtacctgat cggaaagcac gatgccttct 360
 tcgcaatatt tcttgtgcag tgcttccacg aaagcttcct ctggtggcgc aacacgcgcc 420
 gaaagtagat taaaaagtag tcgattctag cgctttaaca tcgcgcgtat atccgccagg 480
 gcggtattgc cgcgaacggc tttgacttcg gttggtgtgt cgtcgttgcc ttcccatgcc 540
 aggtcatccg gcggcagttc gtcaagggaac cggctggggg cacaatcaat gatctcgccg 600
 tactgcttgc 610

<210> 125
 <211> 196
 <212> DNA
 <213> Homo sapien

<400> 125
 ctatagggct cgagcggccg cccgggcagg taaaaaatca gcccctaatt tctccatgtt 60
 tacattcaa tctgcaggct tcttaaagtg acagtatcct taacctgcca ccagtgtcca 120
 ccctccggcc cccgtcttgt aaaaagggga ggagaattag ccaaacactg taagctttta 180
 agaagaacaa agtttt 196

<210> 126
 <211> 247
 <212> DNA
 <213> Homo sapien

<400> 126
 aaattagttt aaaaaatgca ttcctcattt gatatagcca cattccaaat gcttaaaagc 60
 cgcattgata tagtgactac catactggag agtacaaata tagaacttta cccgtcactg 120
 cagacagttc tgttgatttg tgcagcattg gacaatatat acagtttgcc tgtatatgag 180
 aaagagagag agagagagag tgtgtgtgtg tgtgtgtgtg tgaagtgcaa taaggctgac 240
 aggcatc 247

<210> 127
 <211> 590
 <212> DNA
 <213> Homo sapien

<400> 127
 cctccacggc atggcgcaat tgttgttcag gggccgccag gttgctgccc atgccgatgt 60
 agatacgttc cacgtgctta ctgcgcagac gcactcgaag cgtcgccagc gctacgtttg 120
 cgcttgctgc cactgctgcg gcgacgcttt ttcgggccat cgccgggtggc ttgcgccttg 180
 ctgctgagct ctttgatcat ctgcgcggcg tggctgtcgt tggcgtcctg gtagtcggtc 240

caccactcgc	caaggccgctc	ggtctgttcg	cgggcgcttt	cacgcagcag	caggaagtca	300
tagcccgga	cggaagcgcg	ggttggtccag	caacaggtcg	gcacgtttgc	cgctgcggcg	360
tggcaggcgc	tcctgcatgt	cccagatttc	acggatcggc	atggtgaagc	gtttcgggat	420
ggcgaatgcgc	tggcattgct	cggcgatcag	ctcgtgagca	gcttcctgca	tggctggaat	480
tgccggcatg	ccacgggtctt	gcaggcgcat	gacgcgtttc	gaaagcgcg	gccacaacag	540
ggcggcaaa	aggaacgcgc	gggtgaccgg	tttgttctgc	ttgatgcgca		590

<210> 128

<211> 361

<212> DNA

<213> Homo sapien

<400> 128

ctgcccattg	aaaccctcca	ggagctgctg	gacctgcaca	ggaccagtga	gagggaggcc	60
attgaagtct	tcataaaaaa	ctctttcaag	gatgtaacca	aagtttccag	aaagaattgg	120
agactctact	agatgcaaaa	cagaatgaca	tttgtaaacg	gaacctggaa	gcatacctcg	180
attattgtct	ggctttactt	aaggatattt	ttggtccctt	agaagaagca	gtgaagcagg	240
gaattttatt	taagccagga	ggccataatc	tcttcattca	gaaaacagaa	gaactgaagg	300
caaagtacta	tcgggagcct	cggaaaggaa	tacaggctga	agaagttctg	cagaaatatt	360
t						361

<210> 129

<211> 546

<212> DNA

<213> Homo sapien

<400> 129

aaaaatacaa	attcagtaag	acttttgctc	taacaacaat	ttttcaaaac	gaatcaacaa	60
caaaaaagta	tccagtgttt	cttttcttat	gaagatataa	taaaacacag	tattggtaag	120
cacattttta	cagtatgctt	ttcttttgta	gggaaaggag	atatggctat	gtctaacatc	180
gtgggatcca	atgtgtttga	tatgtgtgct	cttggtattc	catggtttat	taaaactgca	240
tttataaatg	gatacgtctc	tgcagaagta	aacagcagag	gactaactta	cataaccatc	300
tctctcaaca	tttcaattat	ttttcttttt	ttagcagttc	acttcaatgg	ctggaaacta	360
gacagaaaag	tgggaatagt	ctgcctatta	tcatacttgg	ggcttgctac	attatcagtt	420
ctatatgaac	ttggaattat	tggaaataat	aaaataaggg	gctgtggagg	ttgatattat	480
taatagtgtt	atgcagaaaa	tatgaatggc	agggaggggc	agagagaaaa	atccatttct	540
tcattt						546

<210> 130

<211> 733

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(733)

<223> n = A,T,C or G

<400> 130

ggggcctctt	cctaaaggca	ctaattcccat	ccaatagggc	ttaacctcat	gacttaatca	60
actttcaaa	acaccacatc	ctaattgccat	cacatcagaa	tttaggcttc	aacatatgaa	120
ttttgggggg	acacaaacat	tcacctcata	gcattcattg	tttcttggtt	ttggcaaagc	180
caagactcac	attgtctaa	ttatttgact	tttgagtccg	cagatgtgaa	aacagtgtga	240
aacagtccag	cttcatgagt	ggagaacagc	atttgtgaca	accaccaaag	tacctctgtg	300
gtcagtgtcc	tcaaccaggg	cacagcatca	tggaccagag	cctctgcagg	gcacagagga	360

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gtggtgagga acaggggctc tggagcaacc ccacttcctt ctgctttgta tatgggggggt 420
tctgcacatg actgcatttg aaaagggctt cactgcgctt gctgaaggag tgcacttgag 480
ctagcggaga gttcccagag ggtgtctgga agaagcaaag gctattcttt gtttctactca 540
gttatagatg gaagtcagac acttctgcct gaagtacttt cacacactcc acagtcttaa 600
gaaggatgga naaagcatgc caactactca naaaaccaca ggtgttcaag caatggatc 660
cttttatncc tacaactagt ggacaaagng gggcctctgt aatttgggaa agctaggaaa 720
actttttctg ggg 733

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<210> 131

<211> 305

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (305)

<223> n = A,T,C or G

<400> 131

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aaacacatac gaatanntna actgtgatta tgaagtgaca gccgggctaaa tatgtcttgt 60
atcttctctc ttcctttttt tgctaactca tcctttattc cattcctgct tccatggtaa 120
tgcaggctca aataaattac taggatacaa gattacttca agcctctttt ctgtggaact 180
cataatatga taagcatttg ttacaagatt gcctgtagtt gtttagggga caaattatat 240
tagggaaaga aagtctttct ttagttgggt aaattttcta ttataattgg gtactaaatt 300
tattt 305

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<210> 132

<211> 545

<212> DNA

<213> Homo sapien

<400> 132

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aaacaatgct acactcattt ttggcaaagt gctgtattgt tcagtctgtg taaaaaactg 60
accatctatg aaccaatcag tataaaaaat ttctataaaa acaaaattta gacagcggct 120
caagaaaaca agctgccatt tatgcataga ttgatgtaca gtaacctaac caaatgtccc 180
ttttgaattt tcaagttact gaaaaaaaaat gtgtcgagaa acacattaag aaggcacatg 240
tacagtctac aatactcttc agtctcccta actcatgccc tgcccctata aaggaaatat 300
gttcacaatt ttaacttgaga aaaaaaaaca aagccactta aaaaaaaaaa aacacacacg 360
caattattaa agttcaaaat ctctggagga aaatacaagc aaaaccactc atacactcca 420
agcctgaaac acacatctaa cctccccagg tactggtttg gttttcagag gtccacctag 480
aaaacaaatc taaaacttca ggcaaaacag agcaaaactg gacatttaac aattacacaa 540
ttttt 545

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<210> 133

<211> 330

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (330)

<223> n = A,T,C or G

<400> 133

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aatatttatt actaatatct tataatgttt tgtggnacca tggcatacct tgggtactat 60

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tgtaacanat	agttcaggaa	accctactat	aagggtttatc	aaatgggtctc	ataaacagtt	120
acttattcaa	gcacgccaaa	gctcagtga	aagtattttt	cacccttact	ctttctcgtg	180
tcattcaaag	agaagttttg	atgtagtgtg	tttatttgta	gggagtaatg	aacagatcca	240
tttcacagta	gactttgtgc	tctaggtgat	gcagctaatt	gccccagttt	ggaaaacatg	300
gacttggatg	aattgtcttt	tgtttgggac				330

<210> 134

<211> 627

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(627)

<223> n = A,T,C or G

<400> 134

aaatattact	tcaaatacat	tttaaagctc	aacaaacttg	tggtgaactg	aattgcagat	60
cctgaactct	atttgaaaat	acatcatgaa	acagaaaanc	ccattccaaa	tgaaaatgat	120
agtgtcttgt	tgggggtggg	aatgagggcg	ggagactaaa	tcactattaa	cagacttctt	180
ttcccaatgc	aatttgtcaa	aagttcaaaa	gttctgaaat	gtactaaatc	ttaagcaa	240
taaattcatg	atattactaa	aactttttaa	atagtgaat	gacttatcaa	gttatagtgg	300
ctgcattaag	aacaaattat	tgtgtgaaat	acctgtataa	acacaaaata	caattaaata	360
tttctttaca	aaaagctgag	cattacgcac	aatagtggaa	tgtctttcat	taggtgtatt	420
ttttaaagat	taacaaaagt	aacatttctt	aaaatgtata	catgtgccat	atttttgcaa	480
acatgcctga	gaatgtattt	aaaacatttc	tgtagtgaaga	gtttgcaaga	acttcacaaa	540
cctgcaaata	aaatgcacat	ttttaaaaag	gtgaaaatgg	catctccaca	ctgcaacaat	600
tcaaaaagtg	cagcatccct	aatctttt				627

<210> 135

<211> 277

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(277)

<223> n = A,T,C or G

<400> 135

aaaatcaa	atattatttg	ttaaaaatca	gcttggttca	ttacnggaaa	ttacaccagt	60
ccgttctatt	tactttcaaa	ccatattcaa	ctcctcaact	ttcaaacatg	taatcaacta	120
atttcaaaa	ggaaaaggta	ccctttataa	aggagagatc	tggttaagaca	ccaagaaatc	180
aaaattaata	tcacttaata	attaagtggg	taacacatgc	ctcccaatac	agtgcagtga	240
gaaacacaaa	acatcaattc	ccgcgtactc	tgcggttg			277

<210> 136

<211> 486

<212> DNA

<213> Homo sapien

<400> 136

aaaacagaat	gaattcattg	ttacagttac	agaagtcaga	agcccaaata	cagtctgcct	60
gaaccaaagc	cagggtcagc	aaggttcctt	tccactgttt	tgccaacttc	tagaggccac	120
ctgtattcct	tggttcatgg	cccctctctt	catcatcaaa	taatcagcat	agctttatga	180

cattggcagc	tctgattttg	ctcttttgcc	ttctctttat	gtagaccctt	gtaattacat	240
tgggtacacc	cagataaccc	caaataatct	ccctatctca	agattcttaa	tgtaattata	300
ttgggaaagt	cccttttgtc	atataagata	acatagcaat	ggattccaag	gattagtatg	360
tgagtttctt	ttgaggggct	ataattaacc	ctaccacaat	atggaaatgt	ctattgtttt	420
tctatgtacc	agaaataaga	cattaggatg	tgaaattaat	aacataacac	cacttacggc	480
atcacc						486

<210> 137

<211> 552

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(552)

<223> n = A,T,C or G

<400> 137

ccatcttgca	tcaaatgttc	ttaaggcagt	gactggctat	caaccacagt	ttctgtctcc	60
ccagttgcaa	acacaggatc	catgcaacag	ttctgagacc	atacacttag	aaaccacagg	120
ggatgcgga	caaatgcaga	actcccaaat	tataaaacag	tcaggctaca	ctcaaaaacaa	180
aacatagaac	atcaacaaca	cacatctccc	aaaaaagaag	tgcaacgcat	gcttgataaa	240
accaacaata	acaaaaaac	cacaataaaa	aatgcagagt	ctcccaaaca	agttttcaaa	300
tgtattgcan	aaagaaaaaa	aatgtatata	tatatataat	taaaaagtct	gaaatactag	360
tgcatagtca	attacctaac	accaagtttc	ttttctttct	gtccaagctc	tactgcccct	420
ctgatactag	cagcatgtct	acaggctaag	accatagcag	caaaaaacgt	ttttcatttg	480
gcattttaca	aattaaatta	ctgaataaaa	atataatttt	ttataaaaact	atttcattaca	540
gtaataatttt	tt					552

<210> 138

<211> 231

<212> DNA

<213> Homo sapien

<400> 138

aaattttact	agtgttactt	aatgtatatt	ctaaaaagag	aatgcagtaa	ctaattgcct	60
aaatgtttga	tctctgtttg	tcattacttt	ttcaaaaatat	ttttttctgt	aaagtataat	120
atataaaaact	tcttgcttaa	attgaatttc	tatattagtg	gttaattgca	gtttattaaa	180
gggatcatta	tcagtaattt	catagcaact	gttctagtgt	tttgtgtttt	t	231

<210> 139

<211> 535

<212> DNA

<213> Homo sapien

<400> 139

cagttgccaa	ccctctgaac	cgtttaggcc	ggttcatcgc	tgcccttgaa	tctgggcccgg	60
tggtgatccg	gcaaggggtg	aaaccaaaga	gcgggggctg	tgaggccctt	cgcagtcctt	120
cgtaagtcgc	tgcgatggag	tgaactatca	cgcacgtgtg	ttatttcgtc	aacacgaaat	180
gtgatttatt	tttgcggaatt	aacacggcag	ttctcgttta	cgttttcgga	aagcgtggga	240
tatgattctg	tctatcctgt	acggatatac	agtaattacc	gggaggggat	tccatggcga	300
agaagcaggc	ggcaccggca	gcacggcagg	aaatgagcgg	tatggcgctc	ctcgggcttc	360
gcgtctcctc	gatgattaat	caccgggtcg	cccagacgca	gcgctgggtt	acgattcctc	420
gcctggacac	ggatggggat	cgggagtggg	aagaggttct	gagcgtgatc	gctgataccg	480
acgagctcga	gctgacgctc	aatgacgatg	gcagtgtgac	ggtagggtgg	gagca	535

<210> 140
 <211> 640
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(640)
 <223> n = A,T,C or G

<400> 140
 acattggtgg cacttgaact gagtgcaaac cacaacattc ttcagattgt ggatgtgtgt 60
 catgacgtag aaaaggatga aaaacttatt cgtctaattg aagagatcat gagtgagaag 120
 gagaataaaa ccattgtttt tgtggaacc aaaagaagat gtgatgagct taccagaaaa 180
 atgaggagag atgggtggcc tgccatgggt atccatgggt acaagagtca acaagagcgt 240
 gactgggttc taaatgaatt caaacatgga aaagctccta ttctgattgc tacagatgtg 300
 gcctccagag ggctaggtta gtacaaactc gcattcatgg cttgggtttcc cagaagatct 360
 ccatttaact tttttaaaga aagtttattg ctttctttaa cctgcatttt ttctaagttt 420
 tttttcgcac aaaggtgctg tctttgtggc aaggcctagg catgacaatc ggaggactcg 480
 agggggatgg aggactagtg atccggctgg ctgcttccag tcgattagag aggtgaaaaa 540
 gctgaacgtg tgcccantna atcttcaaaa aggcagaaac atatcacctt ntgccccnt 600
 aaacttgttc tttttccgaa ggggaaaaaa aaaatggaaa 640

<210> 141
 <211> 127
 <212> DNA
 <213> Homo sapien

<400> 141
 aaaaatcaca cactgacaac acagaaatac gaaatgctag gaaaagtcta gcatatgaag 60
 gaaaaacatg tcttatgcac tctaataata ttttttcaat tagtataaag gcaaattgcg 120
 ttttttt 127

<210> 142
 <211> 126
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(126)
 <223> n = A,T,C or G

<400> 142
 aaatatcctc tggatgcntt caagtaatac taatcatttc atngnnaaaa gtcttttaat 60
 aaacaaattc agagtaaaat taattgaaat atttataata catttggtac acagttattt 120
 ccaata 126

<210> 143
 <211> 730
 <212> DNA
 <213> Homo sapien

<220>

<221> misc_feature
<222> (1)...(730)
<223> n = A,T,C or G

<400> 143
gcaagttctg gagggttcac ttctgagcct gaattccctc ccctgcaaaa tgggggaata 60
ccctcctcag aggggtccctg cgagggtgag gggagatcag catggcaggt gtgctgggca 120
cggcagggcc tgggaagggc agatcctttc cccatccctg ccacaaacaa cccaaacctt 180
taaaggagag caatggcctt gtgtcaaaaa caaaaacaa acaaaacctt gtcctaggag 240
actggggccc taatttctaa tagcaagcct ttatgagtcc ctaacactct actgggctga 300
gtatctcaca cgccagagga taacctgcct tctgctcacc accaccccggt agtagttgtc 360
attgtgtcca ttccacagat gaggcaaaagg ctcagaagag tcatgtgtta aaccagcttc 420
tagagcccat gcaggagctg cagggtggga gaatcacctc taggtgctct tcccatggaa 480
tcctcacctc ccttgagtgg tcaactcactc anctttccaa tgggtgtgtg acctttgacc 540
agctttcttt ccttntctgg gcctcagttt cccaccttgg acaaagtaag aggtctcttg 600
ggnttcangg tagttcttcc taacttcttt tccttttcat ttgagcatcc ttcttcattt 660
tttgccacct ctcttgtcat tacangcttt taccttcggc cgcaaccac gcttaagggc 720
naaattttcca 730

<210> 144
<211> 485
<212> DNA
<213> Homo sapien

<400> 144
ctgggtcagaa atgattctct tgtgacacca tcgccacaac aggcctcgggt ctgtcctccc 60
catatgttac ctgaagatgg agctaccttt cctctgtgtg gcattttgtc gcttatccag 120
tcttctactc gtagggcata ccagcagatc ttggatgtgc tggatgaaaa tcacctgtgt 180
tgcggtggtg gtctgctgcc gccacttcta atcctcatca tgacaacgtc agyatggca 240
tttcaaata agatacaacc attgaaggaa cgtcagatga cctgactgtt gtagatgcag 300
cttcactaag acgacagata atcaaaactaa atagacgtct gcaacttctg gaagaggaga 360
acaaagaacg tgctaaaaga gaaatggtca tgtattcaat tactgtagct ttctggctgc 420
ttaatagctg gctctggttt cgccgctaga ggtaacatca gccctcaaaa atattgtctc 480
aacag 485

<210> 145
<211> 465
<212> DNA
<213> Homo sapien

<400> 145
ccaagacagc tcgtttctgg agagtatgag ggtgtgtttt cttattgtga aaggaactac 60
cttctcttag agggtaggaa gaatgtggtg tgtgtgtgtc tcataaagca accggacatt 120
atagggtgcc aggtcatcta taaaaacgat ccttgggctg tgtaaaaatg aagtggcttt 180
tcagtatcct ctttcacact tgctgcttcg ggagactatg caatgatggg aagggtgattg 240
cccctttatt tcattcagtg ccatgggtccc tgttgttgta gtaatttatt tgtttagttc 300
atTTTTTTTT tcttaacagt caaggggaag agtgattcct cacactgctt tcaagctgga 360
ctgagccagt ctcatcttgg gaaagaaatg ctgtgtccag aactcagcag ctccatctat 420
ttttccagt cgaaagaaac tgatcttttag gcagttttta cttgg 465

<210> 146
<211> 351
<212> DNA
<213> Homo sapien

<400> 146

ccagccgggg	taatctgtat	gtggcggact	tgagctacga	cgtgggcggc	aagtgcctgt	60
ttgaccagat	cagcggcgtg	aagcttatgc	caactcatcg	tttgataaat	ccgaggatca	120
gttcaagacg	tcgcagcggg	tgattttggg	aacgtcgttt	tcggtcagta	aattgtgggt	180
agcgacggag	tggttgatcg	gcaagaatga	tccgtatatt	ggcgggagca	gctataccga	240
gagcctgggg	gctgggggga	gtaaccagtg	ggagaatcag	ttatatatga	acattgggta	300
ctactttctga	cttaagatct	ccagcggttt	aactggcctt	atcgcaggca	a	351

<210> 147

<211> 654

<212> DNA

<213> Homo sapien

<400> 147

acttattttt	aattactgaa	tattttcttag	acgttttggg	acagatttta	tgtaatcttt	60
ataagtatga	tttctgaaga	aaagcaaagt	cattagtatg	tttgccttaa	acttgtagac	120
taaaccaagt	attgtaaaat	aaacagcgat	aacagtgata	gtttttaact	ctatgggtcat	180
tgtatcactc	tggaaaatgt	ggagtagctg	taataaatct	actcctgtat	tatgctttac	240
agtgcaggtc	ttagtttttc	ttttttctca	tttcttttga	aatggcatct	cgaacaaagt	300
ccaccaatcc	ctttacaaaa	gaatgaactg	ctcctctgtg	tgtacttcat	agaaggtgga	360
atcggacaga	ggcaggttag	tgacagttat	tcctgaaata	caggagcaga	gtacagtctg	420
ttgtggtttc	ccggattccg	cgctagctc	agccaattaa	gcatgagaca	taggccattg	480
agccacttag	tagttatgcg	agtggataga	ttggtatgta	agagggaaag	aggtctgctg	540
taaagaacaa	cacttgtttg	tctgtgggga	aagaaaagca	gaatcttgag	atgaaagttg	600
gcatacaaat	aggatactat	cgccagtagg	ttatattaca	aaacatttat	cggg	654

<210> 148

<211> 539

<212> DNA

<213> Homo sapien

<400> 148

tgaatatcat	gagggtgatt	ttcacctgat	tgcaaaactg	ccatagtttg	aaacactttt	60
tcaatttacc	agacacactc	tgtcaagact	tcataactt	ccaacttgca	agcctgtgtt	120
ttgccttctc	caacctaaaa	aggaaaagct	ttaaaccgat	aacttacatt	ctattaaacc	180
atcagacttg	agcttatcca	tctgtttagc	gtgaatgtac	aaaccaggta	catttccacc	240
aaacacatag	aaaaatcttg	tgcatacacg	ttcagctaag	ggtagtagga	caatccttac	300
aatcctcctt	ggattttctt	tttaagatgt	caaagaagca	ggtaagcaac	attgttcatt	360
tgttactggg	tgttctagat	caaaccttca	caagctatat	atatagcttc	atatgctata	420
gcttacaaat	ggggtaacaa	agtaaaagaa	aagaacaaat	tatactttga	cactttatag	480
tcaaagtata	attaaaaaag	aaatcctaca	gtgggtaatg	gagaaataga	taatttttc	539

<210> 149

<211> 273

<212> DNA

<213> Homo sapien

<400> 149

tttttgggtca	ttctcctcaa	ggagccgctg	gatagtagtc	ttgattgact	tccaccttgc	60
ccctcataca	gtccgggtact	aaggccaccg	acatcccag	gaacctccg	aaccacgacc	120
gccaaagcaac	tcgaccacg	ataggtgggg	cctacgctct	cgaagttgat	tggatgctcc	180
cgctacag	gcgggggtaca	gaagggacgt	catttgtgac	tggacgcgca	agagctatac	240
tcagcagctt	tcctctgtcc	cagcccctag	aac			273

<210> 150

<211> 200
 <212> DNA
 <213> Homo sapien

<400> 150
 gtttttacta ccgtatggcc cattttaaag ggatgtgtac gccttacact ataaccctta 60
 aaccacctag aaatatgaaa ctcaaactgc cactgacctc cctcaccaag ctccataaaa 120
 gtaaaaaatt ataacaaacc ttattaacca aactgaacga acatatgggc gattgattca 180
 ttgccccac aatcctaggg 200

<210> 151
 <211> 515
 <212> DNA
 <213> Homo sapien

<400> 151
 ctgtagcgat ctttaagaat attttatata tgaaatctgg atttagggtt cccatggctt 60
 ggcaccactg ggtacagtag ttctacatgg cagtaattca ttggagttga agcagtgagg 120
 aaagagtcaa gtactagtct tttatcctca gtgtccagtg actgtcaaga gaaatgggac 180
 tgcttctgc attgggatat gtgggttaaa gtagtgcca atatagaaga gtgagaaagt 240
 gmacctctg aggcatagta atgttttatt kraaaacatc tcacatgtat tgaatactta 300
 sataggatgt attctgtatt actgaatttt ccagattatt gaagcaatca cctttctgtg 360
 tttaaagttt tagaagaat gcttttaaaa atgcttaaca taagataagc ctgttttcat 420
 ggtgcaaggc cctttctatg aacatgaatc actggactct gaggggttga ctaagatcac 480
 atctacatcc cttttaaatg actagtgtgc tcaga 515

<210> 152
 <211> 243
 <212> DNA
 <213> Homo sapien

<400> 152
 atttcaaca catacttgtc gaggtagtta taaatcttct tagggggagg tgggtggtttc 60
 tgttggaatg ccaattttac agcttctgct gctgattcag gttctttaat tatgcttttc 120
 tttgagtctg cttcagatag cacaacaaaa aaatgatgac acttttcaca cttgacaaaa 180
 cgggtggatg atacaaaagg tctctacatg tgtgcacaag tcgccacatt taggacagcg 240
 cag 243

<210> 153
 <211> 620
 <212> DNA
 <213> Homo sapien

<400> 153
 ttgtcttctc taccttacca tagccagttg ctttcatttt aaaccagagc aagtaacata 60
 ttagtgactt gaatcttcat aagttaaagt aaaaaacagc aaaaaaccta gatctttgtc 120
 ttttagaaca cagaccattt tcaggaaagc agttagctaa gtgtttaatt catgaatatt 180
 gtatactgca tcccttacca caatttacac aatcctgtgg atagtcctac ctcaccctgg 240
 tcaacctaca tgatccttaa gctaattggcg gatcacgatg accttgtaga catgcacaca 300
 actatacctt tgtccaacag atcataatat atctgtctat caactggttt tacctgccta 360
 atcctactga tttgggcact gcttgatag tctctcaagt tcacaggaaa tgttgatttt 420
 ctaaggctct catttttaca gagtatacag gcaaaagtgc aggggaaaag gaattagtct 480
 aagagtaagg ggatgattat tatattgagg ctaaaaccac aaagtggctc aggcctttaa 540
 aaaaaacact gtggataatg acaaaaagca taagtaaaaa tattttgaga aaaataaagt 600
 acaagttttg aacaccccc 620

<210> 154
 <211> 843
 <212> DNA
 <213> Homo sapien

<400> 154
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 tttttgttaa cagtcttaat aaataataaa atggaataaa gaaacaaaa aaaaaagaaa 120
 aagtttgtat gaaaattcat ccctatttct ttattttgga ctaagtagtc aaatttctac 180
 tatattaata ttatgtaagc gacacccatt taaattcact ctctttgata gaaaggtagag 240
 ttgattatca cacctgctat tttttcactg ccaaaragac tgcaataacc tccctccatc 300
 accctcaaaa aacaaacaga aacctctga ggcataagcca ttgtttacat attgtgtttg 360
 tgtgcaccta tctacaacgt tctttcttct aaggagtta tctgccaata ttttcggctt 420
 cagcagcagc gctcttcttg acagactaag agaaggatct acagaaaagt catctgatta 480
 aggttttggg tcaaatataa actctctgga cagaatcttc tttccttcac ttggatttct 540
 gcaaacagaa agcagattat tctcctggca caatagcgac tctagaaacg cttatgtttt 600
 tcagactttg gcagaacttg ttaagaacag catcatcata atacatttgt acaaactcga 660
 atttcagtgg ctcttttgtc ccacatgatg catgatgaaa tttataaagg tctgttttac 720
 cccacaggg tcatttcttt tgtgttccta cagagccaat aggccttcatt taagtccaag 780
 ttattatatt aaccatccct ttcactagac tagagaactt ctttttcattg gtccatatcg 840
 tga 843

<210> 155
 <211> 674
 <212> DNA
 <213> Homo sapien

<400> 155
 tttcgtgtca gccccagggt tgctccagct attcacaagc agaataataac acaagaaaaa 60
 caattcatat cccttaggga aaaaagagga tcaattcatc actcaatatt taatacagcc 120
 aaaatgagct gccaaaacaa gcacacacac aaatactgtg aacagaaaaa tacaagaaaa 180
 tgactaagct gggagtcttg acggggtatg gacattgctt aaagcactta tcagtcccca 240
 gaaaaaccaa accaaaaaca ttttttacga tggcatggcc tcatggcccc ctttaaaact 300
 gttgatggta acaaagggca ggggggtggg agagaaaaca caatcactgc tccctttttg 360
 ctgcagcagt tgactgcacc cctcacggca cggcatgta cacaactacc acacaaggag 420
 gaccaagtcc ctctgctggt ggccctcctaa aaggcaaggc ttgagttttg gctgatgagc 480
 aagttctctc cgttaccat ccctgccaac cagcactacc atggctgaat tgatctaccg 540
 ttttcctgag taaactgtaa ctggctacag tttcggtaac atggaaaaga actcagctac 600
 tacagccaac tgcaatactt caggaacccc ctccatccct ggggctcctc actcctagtg 660
 catcttgatt ggat 674

<210> 156
 <211> 671
 <212> DNA
 <213> Homo sapien

<400> 156
 ctttttagtga acacctttat ctccatgtcc ctcttagagc ccagagagct gcccataggc 60
 attttccaga attcctcatg tcacctagtt caatttccat taactcagat cagccattgt 120
 gattcaccat ttgtcaggct ctgagttta aaaaaacctt ctatcaccat catccttcaa 180
 cagccacagt ctgaattgag ccaacatttt tttttctttg agaaaagaagt gggctggggc 240
 acaactttta gtctgagggg agctagtagt cggcttgaca attaaagcca tccataacaa 300
 cttttctctca aatgtgttga ctctcaggg gctaaactgc tcttagctta gaattatgct 360
 ttactagaga tctaccatat aagtgggtta atcactacca tctgttaact agttatatag 420

cttccagaca	tgagggagac	atcaaacagg	gatggaagca	accccaagga	tatgcaagaa	480
gggcatgatg	aacccccctc	cctctggcag	gagaacaagg	ccaaccaagg	gacagactgg	540
aaagcactta	gatgtttaag	gaggagaaag	gggaagcttt	gaccagtcct	tgccctttgc	600
caagttcagc	cagttctccg	ctgcttgcaa	cctctagcgc	agtaacattt	tgcaagaattg	660
cagattttcc	c					671

<210> 157
 <211> 474
 <212> DNA
 <213> Homo sapien

<400> 157						
cgcgctcttt	aattctttta	gcctagaaag	tcctttacac	tacttaccta	aagggtcccaa	60
agtaaaacac	acactagtag	taaggctagt	gcatttccct	tctagcactc	aaagaaagct	120
taacattttt	gacagtttgc	aaataccgcc	ttgtatttct	gattcagcct	tattcaaagt	180
atcataataa	aatattttatt	aatstatgt	tgatctgcgt	gcattttatga	tctccagatt	240
aacgtaggc	ttctctgttg	ggccctaact	tggaggtgct	tttttggatc	cctcctcccg	300
tgattcattg	taatttcatt	tcccttgtea	tggctctgac	cagagaagat	tctaaatatc	360
tgccccaaa	gccaaaatta	tatcttttga	aaagtgaat	gaagagttga	gtcastaatt	420
tatttttagat	attactgcct	aaaacaattc	cccaaaattt	atggaagttg	gagg	474

<210> 158
 <211> 584
 <212> DNA
 <213> Homo sapien

<400> 158						
ttggattctg	cagttccaca	tcattcactc	cggcaaagga	gagaacttgt	aacaaagatg	60
agtgccaaagt	ttagtcaatt	taccctacct	ggaatactat	atacaactct	gggtctcatg	120
tgtgttaaaa	tacatacagt	gaagctgagg	aagagccact	gaagtaaaaa	gtattgttta	180
caagttggaa	aggatgtaaa	aataatctaa	agtatactaa	gtcaggaata	aaaggcagag	240
ttaataaaat	tgtggctggt	actgatagac	gaaacagata	tattttctaa	atcctggaat	300
aattattaaa	aaattttaca	tgtatcaatg	gattccagac	tccatatttt	aagtttcaca	360
actactgtca	tttaaaacta	taccttattg	aacgtctccc	actctcaata	aattacccca	420
aatcactctt	ctccaaaacg	taaatttggg	acacactgac	ttacaaaattt	tgggcttaat	480
ttataggatg	ttgtggccct	caaaaatatc	attgtgggct	aaacaaaata	aattcttgaa	540
acaattctaa	aaatcaatca	ttgtccaaaa	tgaacttttt	ctaa		584

<210> 159
 <211> 671
 <212> DNA
 <213> Homo sapien

<400> 159						
cctaatttta	ttacttttct	tgccactgct	attattgata	gaaatacaat	ttaataatta	60
agatgaacca	atccattgga	agattactaa	aattgtatct	tcccaatgcc	tcctacagta	120
agattttctt	ataattataa	cccttgga	caatttgaac	tttattttaa	tgttctgctc	180
aaatctaaat	ttccttctcc	taggctgaag	cctgatctaa	ataaggaagt	agttgggata	240
tatccacagg	ctgtcgaaca	tggagctgca	tctgagagac	aggtggcagc	aacccaaagc	300
aaagcagggg	ctgagaacag	gcaggttcca	agagcaaaat	ggaacttgaa	agccaagtat	360
ggttcactgt	aaaggagaaa	atatagaaat	acggaactag	aacacctggt	ctgggatgtg	420
gtaagcacc	aaaatatagg	aaaactgtat	gaattcttgt	gaagcagtaa	actatgatag	480
taatcatgtg	acacatatga	taacaaactc	aaaacagggg	aaagaggggc	tttattcaat	540
gctggagata	agtgaaaaaa	aaagtgaagt	gtctcaagga	cagaagttat	catctcaaaa	600
aggcatatca	gctagatctc	gcggaaacca	tatgattatc	ataattctag	actctgttcg	660

gtattacaaa g

671

<210> 160
 <211> 315
 <212> DNA
 <213> Homo sapien

<400> 160
 ccagagaggg agggctctgc ttcaccacag ggcaccagaa gaggactggt gcgcgggaag 60
 accaggtaat cataatgcta ttaaaaatag cagtaatcat actgttttat acattgtata 120
 atgtcataag gattttaact ttcattgtaac ataattgctg taaaagtctc ccaggtttgt 180
 tttgtgctat ttaccctggg gttaaaatgt gtaagaattt acattttagg tatgttaggt 240
 ttattccttt ttatatgggt tctgtttgaa attttgattt tagaagacat tcattctcaa 300
 ggtcataaaa cacac 315

<210> 161
 <211> 607
 <212> DNA
 <213> Homo sapien

<400> 161
 ttttgtgtgc accttgata attgcttaac ttttaaaatt tacgttcctt catttccaaa 60
 aagggattat aactcactgt tattttgata attgagataa atgtacgtac aagtgttttg 120
 aaactgtaaa gtgcattata aacagaggga tttaccatag aggttctacc ttgatgtatc 180
 aagagaagcc ttttctggaa tctgggtgcag ccttgtgaga tgctgttagg taaggggact 240
 ccttggtaga atttcttaca tttgtgtaaa aagttctggt tcctgagtaa ttccaaagaa 300
 gatgctatga ggagttcact gtgcctttga tttgatccca atgggtcaga atatgttttc 360
 tcattcagta ggctactaca ggatttgaag tagaaaaaac aggggtccagt gaccttcacg 420
 ggatcctaga tgttcatgaa tttcaatcat ttgagattgt ggggtgtggt ccaatgctgc 480
 tctcaaaaag atgttgccct tcttcasaga gcattaataa ctaaaaaatc ccctgggtccc 540
 aaattttatt tgtgtmtctg aaggctttaa ctgaagaaat gaaawgcaca ctcatggaac 600
 aaactaa 607

<210> 162
 <211> 443
 <212> DNA
 <213> Homo sapien

<400> 162
 tgagtgttga aaaagtgaat aatcaaaagg aaaataattc cttgttggtc ataaattaag 60
 catcactaaa gtctcttgaa aggcatttct gtattgggca agatttaaaa tactaaagcc 120
 ttaggtccta ttcataattt aagtagcatg tttgtaacct gttactattt ggagagagaa 180
 gcagttgcct gccacaattg aagactacct ttcaaatagc aaaagagaga gagaaggctg 240
 atatttcggg cttttaaata aagatttgtg tgggtctgct tttactgtaa ctgtcacttt 300
 cccagtgaat atgatttcat atacatttga gggctctaca sgtatgggta aagttctata 360
 aattgcaaca aaatgatacc caatttcatt ttatcctttt tgtattgtga aactggaaac 420
 tttatgacat tgtaaattat cag 443

<210> 163
 <211> 686
 <212> DNA
 <213> Homo sapien

<400> 163
 caggcaaatt atagtcaaat acatcacccc cctcaggcat ctgtggcaag gcatccctct 60

agagaacaac	taattgatta	cttgatgctg	aaagtggccc	accagcctcc	atatacacag	120
ccccattgtt	ctcctagaca	aggccatgaa	ctggcaaaac	aagagattcg	agtgaggggt	180
gaaaaggatc	ccagaacttg	gatttagcat	atcaggtggg	gtcgggggta	gaggaaaccc	240
attcagacct	gatgatgatg	taagttagct	ttgtatatcc	ttgaaacacc	tataaagttt	300
tattttaccga	ttgaataactt	aaatgtaagt	gaaaaatctaa	tagatgttta	tgtaaactta	360
ggtagacatc	acctggattc	cccactctat	tgcttacctt	tttgttttgt	aatttgatca	420
gttcaagtta	aaacaattta	accaaaaact	atgaatgttt	atgatataat	gaaatgattg	480
ttaactttct	tattgctttt	tcacacacct	ataaaaagtaa	ttttattact	cccaagagaa	540
atcactaaag	gcagaattac	tagaggtaaa	aataactagg	gttggtacag	tattactcag	600
gagaagtcaa	ggggagaaaa	cttgtcccaa	tgattcaaaa	taattttggc	atgggggggg	660
ggagggaaaa	aaatttggct	tccttt				686

<210> 164

<211> 706

<212> DNA

<213> Homo sapien

<400> 164

ttttttttgt	ttcatttgct	gcttaaaata	aaaattataa	attagattta	aatgggagac	60
taattataaa	acagattgca	agtaccacca	tttgaaaaaa	aaaaaaaaaa	tcagtggatt	120
tccataaacac	agaaaatgca	tgacatgca	tctacagtag	agttaaaaat	ttcctgtgac	180
taaaaaatta	aaaactggaa	tcaccagtag	caaattgtata	gtcaatggct	atgacaagaa	240
cagatcctgc	cgagctcata	aatgcaatta	ttggcttttt	tgctttataa	aaaagacatt	300
acatatattta	ttgcattatt	ctcctaataa	aaaacatact	accacgtagc	tctccccatc	360
cccattcttt	gcttccagat	ttttatagaa	aataactgtt	ttagtctggc	cttggaagt	420
gaaccaccca	gcaccacctt	cacctactca	ctcttcaatt	caatatgcac	atagcaaaaag	480
ccaacacttc	aatctctttg	cccacatcaa	aaaaagtagt	ttcaggagaa	aaacattaat	540
accagttgaa	taaaaataag	ggcataaaaag	ctatgagaga	gatagctctg	ccatctgtct	600
ctgggctaaa	aatcaaggct	aactattgcc	tttggcacca	caaggttcaa	ggtccatggg	660
tttattagaa	aagtccccac	aaaaaaatta	aacccccctc	acccca		706

<210> 165

<211> 427

<212> DNA

<213> Homo sapien

<400> 165

tyywgggcaa	ttaggcagga	gaaggaaata	aagggtattc	aattaggaaa	agaggaagtc	60
aaattgtccc	tgtttgagca	cgacatgatt	gtatatctag	aaaaccccat	tgtctcagcc	120
caaaatctcc	ttaagctgat	aagcaacttc	agcaamgtct	caggatacaa	aatcaatgta	180
caaaaatcac	aagcattctt	atacaccaat	aacagacaaa	cagagagcca	aatcatgag	240
tgaactccca	ttcacaactg	cttcaaagag	aataaaaatac	ctaggaatcc	aacttacaag	300
ggatgtgaag	gacctcttca	aggagaacta	caaaccactg	ctcaaggaaa	taaaagagga	360
tacaaacaaa	tggaagaaca	ttccatgctc	atgggtagga	agaatcaata	tggtgaaaat	420
ggaaaaa						427

<210> 166

<211> 124

<212> DNA

<213> Homo sapien

<400> 166

accatgtttt	cgttgtgtgt	gagcagggaa	gggaactttc	ctgccttatt	taaacctggg	60
ccgaggattc	gtggaatctg	cttgatcaga	gactctgagg	ccaaaaacgc	atcatacttc	120
ttgg						124

<210> 167
 <211> 232
 <212> DNA
 <213> Homo sapien

<400> 167
 tctgcatagc aaatatgatt taagaattta acatcattat ttgatcacia gcgtaaatat 60
 gtcaccataa ataaatgtaa attcattgta caaaaattcc caacaactct taatacaaat 120
 atgggtacatt tgacagtttc tgaaacagat tattttttaa acttttttaa acctaagctt 180
 tatttttttc ctgggttatta gacacacaca aaaaaataa aaagaggctg gg 232

<210> 168
 <211> 677
 <212> DNA
 <213> Homo sapien

<400> 168
 tttcacaatt aaccaacatg caaaaattct cagactaaac actgagaaat tcttcataca 60
 atgcatttgc caccttattg cattttttaa atctttattc tatagtgaat tgggtattccc 120
 aatctgccta agcaaaggca tgcccttcta acaagatttg cttagagcag aggtgataga 180
 aggaagaatc cgaagaccct ctggcatggc aatctgggag cagcacattg ttgatggagt 240
 ccaagtgagc acatttcaca caattcattt agtgacaagt gggcttgctc ccttttcattc 300
 caggaaaaaa actactcaca gaccactgcc cagaatctgg aataagaacc ctcatatttaa 360
 ggtattcttc ccaacaaata aatatctaaa tattgaaagg gggcatatca gaaaacttaa 420
 aagacacaat aaccaaaaacc aaaaccctct tcaaaacaag taagcaatgt ctgtatttag 480
 ttcactctaa aacattctta gcttttcttg cagtttggtc ctaaaagatt tgattgggca 540
 caagaggaac gaaattatta ataaaataaa agcttatttt tgtttttgct gtggataatc 600
 ggtacaaaac gtttccagat ctgagactta aatggatctt ttaaggtgaa aaggagaatg 660
 ccaggttcta ctgaaat 677

<210> 169
 <211> 635
 <212> DNA
 <213> Homo sapien

<400> 169
 ttaagaagac tgggcattta tactctctct tgctagtcag cctggagcaa gcttggagca 60
 gacgcacatt tttgtactgg cacatattct tagacgacca attatagttt atggagttaa 120
 atattacaag agtttccggg gagaaacttt aggatatact cggtttcaag gtgtttatct 180
 gcctttgttg tgggaacaga gttttgttg gaaaagtccg attgctctgg gttatacgag 240
 gggccacttc tctgctttgg ttgccatgga aaatgatggc tatggcaacc gaggtgctgg 300
 tgctaattctc aataccgatg atgatgtcac catcacattt ttgcctctgg ttgacagtga 360
 aaggaagcta ctccatgtgc acttcctttc tgctcaggag ctaggtaatg aggaacagca 420
 agaaaaactg ctccagggagt ggctggactg ctgtgtgacg gaggggggag ttctggttgc 480
 catgcagaaa gagttctcgg cgggcgaaat caccctctgg tcactcacat ggtacaaaaa 540
 tggctttgac ccgctaccga cagatccggc cgggtacatc cctgtctgat ggagaggaag 600
 atgaggatga tgaagatgaa tgaaaaaaaaa aaaaa 635

<210> 170
 <211> 533
 <212> DNA
 <213> Homo sapien

<400> 170

ctgtgatctc	acaagtgtga	aaaatcttat	gaatgtaaaa	tgtgtggaga	ttcttctttg	60
tttttagctt	ccactttggg	aacatgtcaa	agcacacatt	gagaagtccc	atgagtgaag	120
gagatgttgg	aaagcccttg	aacttggtcg	ttaggaaaca	tccacactga	agaggaacct	180
gactgtatgg	aaggtcaaaa	aggctgtatt	aatttacatg	caaaaagtca	cactagagga	240
atgccatata	agaatgcttt	tggtaaatat	acatgtttta	aagagggttat	atatcattaa	300
taaaaatata	tagctgggtc	gaagaccctg	agttatctca	attgttcacg	gttacagatg	360
gaactcttta	ttattgagga	gttccactct	ttccccatt	tgtcactact	acacttccct	420
agtctttaa	acaatttttag	gctgggtgca	gtgggtcatt	cctgtaatcc	cagcactttg	480
aaaggccgaa	gcgagtggat	catttgaggt	caggagtctg	agaccagcct	gga	533

<210> 171
 <211> 568
 <212> DNA
 <213> Homo sapien

<400> 171						
cccttgscaa	actttccctt	aagtattgca	ctacaagtct	aagacacttt	tactcaaaag	60
ttccttcctt	ccttacctct	cttttaactt	ggagtcagac	tttcatcagt	ctgacaactt	120
ctccctgtct	ccttcctttt	cccccttca	caagcatttc	acctaacaaa	tttcttatgt	180
gcttaataccc	ctcttagaag	cagatgccaa	gatgggatta	agcacataag	aggctctgga	240
ctaatacaat	gacaaaaggct	ccccttgaag	catcacacta	aaaggaaaaa	aaaaaaaaaa	300
acctagccat	tttacattaa	ctatttctaa	aatatagtat	ttgcttcctt	atttgctaaa	360
acaaaatata	ctaaacatga	ctattccaaa	aatctgtagg	gtactaagaa	tatgaagaga	420
ttcactctac	ttcaggggat	ggagttgtag	tagaaaaggc	tttgtggagg	gaggggtggtg	480
tttgaaatgt	actttaaaag	ccatcctcaa	agcctcgagg	gctataacctg	gcctggtgat	540
tatccaagga	cagtccattc	aaacaggg				568

<210> 172
 <211> 167
 <212> DNA
 <213> Homo sapien

<400> 172						
ccatttacag	gaatcagcca	cttcagttca	gacagcttta	ttaaaccgcc	tggagcgaat	60
tttgcagca	tggtttcctt	ccatacttgt	ccctgatgct	gaagaggaag	ttacttccct	120
gaggcacttg	ctggaacaa	gcactttgcc	aataaaaacg	agagagg		167

<210> 173
 <211> 391
 <212> DNA
 <213> Homo sapien

<400> 173						
cctcccaaag	tgctgggatt	acaggcatga	mccmccmcgc	cctgatgata	gacacgtttt	60
taactttctaa	aaatatatga	tcatgattgt	gtctgtggag	acttgcacat	atactaaatt	120
ttaamcaatt	agagatattt	gttcattacc	acattttggg	agtcattatt	tcctctatga	180
agagagaaa	gaatttgata	caagttcaca	ggggcttcca	gtagattgag	acttttattt	240
ctagctgagc	tgctgatgta	tgaatttttt	ttgktattat	gactttcata	tgtattaaaa	300
ataaaatgaa	aaaacaagg	attaggtgag	gaacctatac	gtctctaata	tgcaaaatag	360
cacagaaata	atgactgktg	ggaaaattag	g			391

<210> 174
 <211> 474
 <212> DNA
 <213> Homo sapien

<400> 174

gaactcagag	agaggattgt	cacccttggc	atctgagctg	acactataag	gacaatgagg	60
agtctccttg	gggatagatg	gggagatgga	aggacgatgc	ctgtcctacg	gggtccttga	120
aggttagggg	tacacactgt	gagctgccac	aggctcaaca	gtacggatag	ggggtgctgg	180
aaccagccag	ggctctgata	accaagctat	gtgccccatg	cagaggaagg	ggtagtggca	240
cactgaacca	cccagccaca	aggctatctc	cccatacagg	gcacctttaa	aaaaattatc	300
cttacagggg	aagacgggga	ggaaggatga	actgtgtgcg	gtgatgttgc	agtgagtgtg	360
agtttgtgtc	cgtccgcttg	tatgagggcc	taccttttac	taactagccc	ccaactttca	420
ttatctcccc	ttttctgtc	tacccttctg	cctttttaa	gtggcttgca	atcc	474

<210> 175

<211> 655

<212> DNA

<213> Homo sapien

<400> 175

ccttgacagg	gtggggatgt	gtgggcttgt	tcactgttac	agcccatgta	tacctgaagg	60
gcaacatgta	cccacaaatg	ttccaggagg	taaataaaaa	atacaattca	gcctcttcta	120
aaccatcctt	gttgatatct	ctgtactctc	cgaaagttaa	ttcgttatct	ggactccata	180
attttctcta	ttaattcacc	ctatgtccaa	ctccaacagt	gaaaaaaatt	tatttaattc	240
ttgcaataag	cctataggca	ggcagcatta	tcctcagtct	gcagataagc	taaggctcag	300
agaagcttgt	atactgtcac	ttaggtagta	attgcaagag	ctggcattca	gaccagact	360
gtgggactcc	tcactccatt	ctctttcccc	ccactaggct	gctccttaaa	atacaatgga	420
tgcttgatga	acgcttgtgg	gaatcctggg	tggacacagt	tccttttcgg	ccaaaagcac	480
cttgacgact	tgtgaagaat	taatctggaa	aacttaacct	atttataaaa	acgtgttatt	540
aagggcaggt	tattcccacc	ccctttacca	aagaaacccg	ccctgacctt	tttttactgg	600
gggttggtct	tgggcatttt	caacaagggg	ggaacagttt	aaaaattccc	ccctt	655

<210> 176

<211> 660

<212> DNA

<213> Homo sapien

<400> 176

cctgggtcaaa	gtgggcatga	ccattcaagc	attactagac	atcaccgtaa	cgaaggctct	60
gttcacatga	aactaccctt	tctccattgg	ggggtcagac	tctgctctca	tccaggatcc	120
tgaactctgc	tccaggcacc	tgttcaaccc	tctctccacc	ccactgcctg	tcacttcaact	180
gactccagtt	acattgaaac	aattttcagt	ctaaggagg	attttctacc	tttcagagct	240
gacctccgac	tttaagactt	gacaggtatt	tatcttgaaa	ccagagagg	agctggagga	300
aaaaaaaaact	gagcaagcac	atcaatgcct	tttccaccct	tcttcacctt	ttccacactc	360
accgactgcc	attaccaaaa	cgccaagcac	aaccgggttg	gaacaagacg	cattccgttt	420
taattaaaac	caactcatta	tgtatttttag	tgggggggaa	ggggggcaca	atcagggttt	480
tcaccaccaa	attttccaca	cggtttctga	acaccattgc	cttttaaaaa	actatttttc	540
cacctccaaa	atattttattt	aaattttatt	tattacggag	gtgggtattct	tcctttggga	600
gccaaattgg	gaaatttagg	gaaccttttt	tattaccggg	ttttttgggc	gggtaaaccc	660

<210> 177

<211> 459

<212> DNA

<213> Homo sapien

<400> 177

ctttttctct	tcctctgtgg	aatggtgaaa	gagagatgcc	gtgktttgaa	gagtaagatg	60
atgaaatgaw	tttttaattc	aagaamcatt	cagaamcata	ggaattaaaa	cttagagaaa	120

tgatctaatt	tccctgttca	cacaaacttt	actctttaat	ctgatgattg	gatattttat	180
tttagtgaaa	catcatcttg	ttagctaact	ttaaaaaatg	gatgtagaat	gattaaaggt	240
tggtatgatt	tttttttaat	gtatcagytt	gaacctagaa	tattgaatta	aaatgctgkc	300
tcagtatttt	aaaagcaaaa	aagggaatgg	aggaaaattg	catcttagac	catttttata	360
tgcagtgtac	aatttgctgg	gctagaaatg	agataaagat	tattttattt	tgktcatgyc	420
ttgkactttt	ctattaaaaat	cattttacga	aaaaaaaaaa			459

<210> 178

<211> 720

<212> DNA

<213> Homo sapien

<400> 178

ctgcaagctc	ccactccttc	catttatctt	aacgcccagg	ctgacttcta	agctgctttt	60
cactttccta	cctccactgc	attttcgccc	ctgataattt	ttgtaagctt	acctaagcct	120
cccttctttt	gagatccctt	tcttaaaagg	gtccattcta	ttaaccctac	cccatatcca	180
gttactttta	ctacctgctg	atctatcgct	acctgtgcca	attcatggga	attacagggg	240
gcactgggac	aagagtaaaa	tgatccaaca	aacataatgt	tgcatttaaa	aaaataagct	300
aaaagatact	gatgactttt	tataactaca	acataattcg	ttgtgaataa	gaacatatat	360
agtaaaaaga	tgaaaatgtg	aacaggttga	ctatttccta	aatttatggc	agaaggttgt	420
tctggagagg	atgggaagaa	aaaatgaagg	ctggcagtg	tggtggggga	aatgcaacct	480
ccaaaattat	ctatctatat	atttttatta	aaaacaccca	cagtaattat	ggcaaagtgt	540
aatggtttgt	ttgttctaag	gttttggata	catttaagat	ctcttgcttt	ctgggtacca	600
tttcttttct	tttcttttct	ttttttttca	aattaattcc	aaaagactta	tatctgctac	660
atgaagaacg	aagcaagttc	agctctcttg	gctgaaatgt	tcaaagtctt	gagggcaagg	720

<210> 179

<211> 427

<212> DNA

<213> Homo sapien

<400> 179

ctgtgaatct	gtctggttct	gaacttattt	tttagttatt	ggcaatcttt	gtattactat	60
ttcaatctct	tcttggttta	atctaggagg	gttgatatatt	tccaggaatt	tatccatctc	120
ttgtaagttt	tctagtttat	gcacataaac	gtgttcatag	tagccttgaa	taatcttttg	180
tattttctgtg	atatcagttg	taatatctcc	catttcattt	ctaattgagc	ttatttgaaa	240
cttctctctt	cttggttaat	cttgctaattg	gtctatcagt	tttatttatc	ttttcaaaga	300
accagctttt	tgtttcattt	atcttttgta	ttgtttttgt	ttgtctcaat	ttcatttagt	360
tctgctctga	tcttcgttat	ttcttttctt	ctcctggggt	tggttttaga	ttgttcttgg	420
tttctctt						427

<210> 180

<211> 728

<212> DNA

<213> Homo sapien

<400> 180

caaacacaaa	agtcactgtg	tgtgtgatgc	ttctccaatt	ccactcatcc	tggtgcat	60
tcatgcacta	gtgcatgtat	gcatttttac	attttttaaa	ttacaaaaat	caacctatta	120
taactgctta	gatatatatg	aagtaaaaaat	gaaagttctc	cctttacatg	acccatcccc	180
catcatttcc	ctcttttatct	tatactgtca	gcattcccag	ctttagcac	agtgtctggc	240
aatagtaaat	cctcaaaaaa	tgatcaatga	ataatttaat	aatgattaat	aaataaatta	300
atgatgatgg	tgaagataaa	ttttagcatt	tattgaacgc	taactacaaa	ccagggagtg	360
tggtaaatat	tttataaaaa	tcaatgaatg	agctaaaaatg	ccattctatt	atttttttgg	420
atacgggtta	atatttttact	cataaatatg	cttaaaagaat	attataatta	tatgacttag	480

aatggtaaaa caatatgtac agcagtatcc tatttttttag aataaaaaata taaatatgtg	540
ctcacatatg tgggtggggc atgcctagaa acccgattag aacgggattt tttcttacca	600
ccattttttt tacctgggaa aaatatggga aaattttatt tcccttcttt ttgggttctaa	660
aatttatata caggagccta tttggctttg gataaatcat tttaaaaaag gtgggtttaa	720
aaaaaaaa	728

<210> 181
 <211> 546
 <212> DNA
 <213> Homo sapien

<400> 181	
acaatccttt ggaagacact actgggcttt ggggtgctgct ttttaataat tgagttattt	60
tgagcttgcc aagtaggac tattgcctgg actaaaattt atttcctaatt cttctgatga	120
ccaagaaagg aaaaattaag tttgcagatg ggagatgaaa tatagccagc gaatatgcat	180
actgggtctg aatgaaaggga attaaactttt cagtcaagaa acagtctgca tgccgtaaat	240
tgaatttttc ctgcaactgg aatgattggg taattctttt tgaacactgg cctttctccc	300
caagaacact aatgaattgc taatattttt taaagaaaac tgggtttttta attaggttaag	360
ctccacttcc tcttattttt taatccctaa agaaaactgt taaaaggga tggtatctatc	420
acgccttttc ttttaaaacc acctttttaa aaaaggattt ttccaacccc caatttgctc	480
ttatttttaa attttgaacg ccaaaagaag ggaaataaaa atttttccct taattttacc	540
ccctta	546

<210> 182
 <211> 333
 <212> DNA
 <213> Homo sapien

<400> 182	
ggccactctg actgggtctg ctaattcaca tgctctttgt gacatacggc tctaagaggc	60
agaggctgga agagaagtat gtgggttgtg ggatcaagat acccaagttt cagtcttgac	120
actgctatta cttagttagg tgaccactgt aacttcattt tgattgagcc tcagatgtct	180
cacctgcaaa atggagtgtg aaatttgcta tgggtgggtg tcacacggat taaatgaaat	240
aatgcctgtt aagcgcttat ccagcactta ataagatggc cactgcatca taatgctttg	300
ggcacaagta acacaacatc caaccctaaagg ggg	333

<210> 183
 <211> 393
 <212> DNA
 <213> Homo sapien

<400> 183	
ctgaatttct tgggctttat gtggcagtgt ggtaaaaaata tatgatcaga tttcactgtt	60
aagaaaattc tttcagcaat acatgtagag tcaagtttct tgcattggata actgaacatg	120
tgggttatga gattttaaaa aatgtctcgt gacaaacttt acggaaatgc aacaatctgg	180
acatctagtt ttgtctgaga gtggcgtgga tatgaagaac tgtgctgttg gtgctgatgc	240
cacactaagt tttggcagtc acactcttgg ttcttcattt ttgaggagat gggatggtga	300
ggaggcctgt tggctttatt ttattacgtg ccaccatcta gaatacagat tcttggatat	360
ttcatcttca caaagggtgaa gctgcaaact cag	393

<210> 184
 <211> 700
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(700)
 <223> n = A,T,C or G

<400> 184
 ccaggscawt gaggaaaagr gaaagaatwt arrggstwt caaataggaa aaraggaagt 60
 ccaaattggt cccntgttkg ccagataacc atgattgkgk atttagaaam ccccatgwtg 120
 tcagcccaaa atctccttaa gctgattaag camcttcagt aaaktctcag gataaaaaat 180
 caatgtgcaa aawtcacaag crttcctatm cgamcaatam cagmcaaaca gagccaawtc 240
 atgagtgrac tcttattcac aattgctagt aagagaagaa aatmcctagg aatacaactt 300
 mcaagggatg tgaaggwtct cttcaaagaa gaactacaar ccrctgctca aggaaataag 360
 agaggmcmca agtaaattggg aaaagcattc tatgctcatg gataggaaga atcaatcccg 420
 tgaaaatggk gatactgccc aaaataattt atagattcaa tgctatcccc atcaagctac 480
 cattgacttt cttcmcgga ttnngaaaaa tctactttac acttyatagg graccaaaaa 540
 agaagcccwt gtacccaaga caatcctagg caaaaaagac caamcctgga ggcatcacag 600
 tmcytgactt cmaactatwc taccaaggny tmcrgkgmcc aaaacagcac ggkacntggg 660
 mccaaaccrg acwtwtwgac cmmcagacac agaacmgagg 700

<210> 185
 <211> 192
 <212> DNA
 <213> Homo sapien

<400> 185
 ccagycctttc ttttaagtaa gcgctttttc aagctcattg tagctacaaa gtcaataaat 60
 tgggtctttgt tattttttacc tgaaaaggct gttaaagggt aaaatgacaa actcaaattc 120
 aaaggggattg gaggatattgg tgtttatgat ttctcagaac aacaatctag agaccaccag 180
 ggtgggtttc ag 192

<210> 186
 <211> 688
 <212> DNA
 <213> Homo sapien

<400> 186
 gtgctggaat tcgcccttag cgtggctcgcg gccgaggtgg gatatttctt ctggatagat 60
 ttcagatagg tagttccctc aaataagatt atatgggttt gcattttcaa ggcagagttg 120
 tatacttctt gctctttatt taaataaaaa aacttgaaaa tctgttctgc ccagtattgt 180
 aagcgctcag gtacaaatat gaatgaaaca atctctgcct aagtaacaca agtataggga 240
 caagattctc agtaaaaattc tcacgtgaaa tttgtaactc actagacact atcaggagat 300
 caataattat gtaattaaaa aaaataatta cctgccaac tggtttcttc tttggcactt 360
 ctgcttggtt ttaagacaat tctcacatag aagcttatta ttccccatta gtcattccat 420
 agatgtaaaa ctggtagaaa caggacttga attgaacatt ctttacaagt aagttatata 480
 gcttctgaaa aaagggttg aaaaagcatt tttggggact ataagaacct tcaaattgctt 540
 tcccccttta acaaacctta aaattatttt gaaaataatt taagggggct gattttctct 600
 tgtcaaaatc ttgaacccca cttaccagggt ggttggtcaa accaaagttc aaaaaaagc 660
 ttctggcctt tcctttatcc cacttgca 688

<210> 187
 <211> 779
 <212> DNA
 <213> Homo sapien

<400> 187

gcaaaaaaca	gatacatttt	cagtgtttta	aaatgaacaa	gtatggaaa	gcttatacag	60
taactgaaaa	gtctcctttg	ggaagccaag	gtgggaggat	tgcttgaggt	caggagttca	120
agaccagccc	aagcaacatg	gcgagacccc	atctctacaa	aaaattaaaa	aatcagccag	180
gcatggcgga	catacttgta	gtagtactta	catgggaggc	tgaggcgagg	ggatcacttg	240
agtccgagag	tttgaggctg	cagtgaagcc	caacgcgccc	tgtactccag	cctgggcaac	300
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tgttctacaa	aagtcctatt	tcttcccaca	aaaagcctct	ggtacctggt	gttagttctc	420
gggggtggaag	attactttta	aaaatagaac	tattttttta	gtatatcttt	tagggaactt	480
tagttcccga	agcttttaga	aatgggatct	tgaaaacaaa	agggtattca	atacctatga	540
caatgcctaa	agaattattg	gggcatttat	ttttcaatgg	agggtccaca	aatctttgga	600
aacccttggc	caattaccag	aagccacttt	aatttttgac	cgaaaatggt	tttaaaaatt	660
ggcttttggg	aaaactgtct	ctttcccaaa	aaatgaaaac	cttgaaaaaa	aggggaattt	720
ttaaggttgc	cccctcatta	aattttaacc	cctctgaaa	aaaaccctct	tgtgacagg	779

<210> 188

<211> 394

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(394)

<223> n = A,T,C or G

<400> 188

ggcgamgtct	ggyccaccatc	atgcccttta	atcaactcac	acctgtttta	agagtgtttc	60
tgatttgacc	ttcatccctt	agtttactgg	cgtaaaaaa	agtctcagca	attttcatta	120
tttctcgtgg	gtctcattat	caaaccctta	cttatttcgg	catatttcct	ctgggcttct	180
tctagtttct	gccttacaag	caatgctgtt	ctgtaaat	attgaaacct	ctggaacatt	240
tcacctttag	agatggagga	tggaaggatt	ggyaccagaa	gagggttaag	atacgttytc	300
tgtcttngag	ctgaaagcac	agycactctt	ccttctgttt	gycgatgaga	aaagttgagg	360
ccagaaggga	ggtgacatgt	ttagagtcac	ccag			394

<210> 189

<211> 681

<212> DNA

<213> Homo sapien

<400> 189

aagttctgac	tttgggtctat	aaaacagggg	tattggctgt	ggctgcactc	aatatctaaa	60
aagttattag	gaagtgcctc	gttattgtca	ttaaagatat	ctaaatatgg	tagaccaag	120
gttggtgaga	aacacatatt	atggactgag	ttctgtttct	tctgctgtgg	cgcacctaag	180
ctcaagcctt	ccttctctcc	ctccccctct	ggccggcatg	gtatctgagc	tcacagacag	240
acaaggcatg	ttagaatcat	cagatcatga	gcaccgtgct	gggatttagc	cctctccaaa	300
gtcaattctt	acagtccata	ctttgcttaa	atcctcagtt	gttgagggtc	gctctgctgt	360
cagtaatccc	agctataaat	ttcccccaaa	tgtggggcct	agataaaagta	gaagggtgat	420
ggactcagct	tattttcatg	ggatgacagg	aactggaaag	agaaagggca	ttgaaaataa	480
aaagttattc	cagaatagca	ttaacctctt	tactgttcaa	gaattaagaa	agcctactta	540
gaaatgaggg	ccttgagaat	gatacccaaa	tattgttctt	tctacaaaaa	aatggccttt	600
ccaaatatct	gctttcctgt	tcccaattg	gctttttaag	tagaattaag	ttacctaaaa	660
ctttacctga	agggtggttt	t				681

<210> 190

<211> 839

<212> DNA

<213> Homo sapien

<400> 190

caaatacatg	atctccattg	gcatagactc	ttctatagtc	tctcaggcac	accttatgac	60
taataagaac	actgtcttct	agatataagc	caagttttag	gagttatctt	tgtagtttct	120
gtgttgagac	tatgggtctt	ccctgtgcaa	agacttgatt	agcaaatact	atctgaaacg	180
atcccaaatt	catagtgcag	ttgaccaccc	ttctgatcaa	ggggatctct	gtatatccca	240
tgaaagcttc	ataggtctca	ccctagatta	agtgtctcac	ttctcaagac	agtgaacaga	300
tggaagactt	ttgtagttat	cattatacaa	ctgtgccctg	tgtgttttat	tatacaacca	360
gagaactgag	gcactggctt	tacctgtcag	ctacgccagg	gggtgtgacgt	catctttctg	420
acttgatcac	acatgccaca	ttgcttaata	tttcaagctt	agactgaaat	aatcctgtgg	480
taaaaaattt	ttggggggct	ggggaggtaa	agaacaaggg	ggggaacttt	ggaatatttt	540
tattcattaa	tcatatttcc	cgaattgtat	tttattttga	aatgaccata	agggacttaa	600
atacgtattg	tggttaaatt	aaatggaccc	aaatggaggt	aagtaaacct	aatgggacaa	660
atgaataaaa	ggtttatgac	tgggagcatt	tacccatgaa	cctccttaga	agctatttaa	720
cctttctttt	ggaaagccct	gaaggctggg	aacttaaatt	ttaaagacag	tacctatttc	780
cagaatcgct	tccaaatggc	catgttttaa	agggccaaca	ttttgggatg	gccctgccc	839

<210> 191

<211> 697

<212> DNA

<213> Homo sapien

<400> 191

ccatcctgaa	tactgatttt	ctaattggaac	tctattcaat	ggcgattgta	aaacctgag	60
gctccgttac	tattatggag	catactttca	tctcattctc	ggctattggg	caatatgtat	120
ctcataagat	tttatcacat	ttcacagatg	aactgttaat	tgattccatg	ggtacgatta	180
ggcgagatcc	aagctggagc	tgcagctctg	agtcccataa	attctttgtg	cttctgtaaa	240
gaataaatct	gtttttaatg	caaattaaaa	ctactggcag	ggaatttttg	ctcccagtta	300
ttaaaagact	ggaaatgtgt	aagtggagaa	aggcaataac	tgcagtaatc	tcttaccgga	360
ctctattata	attccaaaca	tacataatgg	tgagaaaaac	cgggaaggga	agaatgtggc	420
aatgtccact	ctttgcccc	aacataaccc	ttaatttcca	tggcgggccc	aaacactggt	480
aaaaaccaaa	atgggtacct	ctatagcatg	caacttttat	ttcactccaa	acgaaaaatt	540
attttgacta	tggcttggga	aatccattag	tagaagaagt	tttataacct	ataggaaccc	600
ggccatttca	tttctaccaa	atcacaggaa	ttttagaatg	ggcaagggaat	ttacaggaag	660
acttgcccaa	ttatcttttt	ttgggggact	aaaccaa			697

<210> 192

<211> 687

<212> DNA

<213> Homo sapien

<400> 192

ctggttacta	tagcttttga	gtataattta	aagtcaggta	atgtgattct	tccagttttg	60
ttattttctg	ttaggatagc	tttggctatt	ctggatcggt	tgtggttcca	tataaatttt	120
aggatagttt	tttgctattt	ctgtgaagag	tgtcattggg	actttgatag	ggattgcatt	180
gaatctgaag	attgcttttg	gtagtatgaa	cattttaaca	atattgattc	ttccgattaa	240
tgaacatgga	atgtttttcc	tttatttggc	gctctcttta	atttccttca	tcagtggttt	300
ataggtttca	ttatagagat	ctttccttct	tttgggtaat	tcctacgtat	ttaattttatg	360
tatcgctatt	gctaaatgga	atgacttttt	aaatttcttt	ttcacattgc	tcctgggtggc	420
atattaaaag	ctactgatgg	atgggtgattt	tggattctgc	cactttactg	gaattgggtgg	480
atcagttcta	atcgttttct	tatgcacccc	tttacggttt	ctacatgtaa	gaatatatca	540
ccttcaaaca	cggataattt	gacttcttcc	ccatccaatt	gggaggccct	ttatatcttc	600
tcttggcctg	aaggctctac	ttaaaacttc	ttatcccttt	gttgggaataa	cagtggggagc	660
aaatggacat	cccttgctcat	gggtccca				687

<210> 193
 <211> 493
 <212> DNA
 <213> Homo sapien

<400> 193
 ctgctaaaat gatgttgcta aagcattcct ttttcttttg attaaacttc atgtttacaa 60
 aaaaattaat tctagcagaa taacgaatgg ttttgtttct tagttctctg ctgaatgaac 120
 agttttgcca attatcttca tagagtagtg atataatgaa tgcaacctca aatgcaaacc 180
 aaccaattca cagtccatac cccaatcact tccttcatca gcctcaaaaa tcgctaagtg 240
 aaccagtaga atggtttttg agcagtaata ggaaagcaaa tagaaagtca agggggactt 300
 tcaacgccaa caagaccaat tcagatcctg atctgactgg tttctaatac aatctctttc 360
 cagagtaatg gagcatgagt ctgccacaca gaactttaga gagagtcctt tatttcaaag 420
 actgtaaagt tggaagaatt cattcatctg caaagtcaaa tgtcaaaagt tgtgcttccc 480
 actcctcatc agg 493

<210> 194
 <211> 424
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(424)
 <223> n = A,T,C or G

<400> 194
 cyagggcant tna gcangas aaggaaatan mggggattca attaggggaac wraggakarw 60
 caagttgtcc stgtmtgcag atgmsgtgat tgtatatcta gamcacccca ttgtctcagc 120
 ccaaaatctc cytaagttga taagcawctt cagcarmgtc tcasgatscr acmtcwatns 180
 gcraaantca cmwgcattct tatacaccaa tawcagacaa acagagagcc aaatcatgag 240
 tgaactccca ttcacaattg ctacnmaaga gaataaaata cctaggaatc caacatacaa 300
 gggatgtgaa ggacctcttc aaggagaact acmaaccact gctcaaggaa ataaaagagg 360
 atmcaamcaa atggaagaac attccatgct catgggtagg aagaatcaat atccgkgaag 420
 atgg 424

<210> 195
 <211> 229
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(229)
 <223> n = A,T,C or G

<400> 195
 tgaacaccct tnggaaggaa cctgctcgna tgtannanaa anggaccgga cagtctgcta 60
 aaatcgccct ctttagacgc ggcgcgccgg ggcagagttt ttctctggtg ctttgacctg 120
 tatttggttt aatgggtttt tcctaattct ttcaatcaat aaaattgtgc gtattttaact 180
 aaaaaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa aaaaaaaaa 229

<210> 196
 <211> 557

<212> DNA

<213> Homo sapien

<400> 196

gcggtggctc	atgcctgtaa	tcccaccact	ttgggaggct	gaggtgggca	gatcacttca	60
agttgagagt	ttgagaccag	cctgggcaac	ataacaaagt	gagatcttat	ctctacaaaa	120
aaattaaaca	aacaaaaaaa	caaatcaaca	ttcatttgca	gggctctttg	gtcttcttaa	180
agaacaaaca	tatgaaataa	ataagctgat	tcttaaagat	aacaaatata	atgagctttc	240
tcaactgtaa	aagcatctct	aagtgttct	atcaatgcat	atccactcca	tgaactaacc	300
tgaagaaagt	gttgaccatt	ctacccaatt	aactgtaaac	taagattgct	ttaatggttt	360
gcctaaattt	gagtaccttt	aaatttttgc	tttttatcca	aattcattct	cccttcttca	420
aattaaatag	ttttgttaga	aatcggataa	gcaagatgta	cttttttagaa	agggcaatag	480
aatcctacaa	catgctagaa	tttgaaatgt	ttttttaaat	cagtmmtttc	tctatgctag	540
taactaagaa	aattata					557

<210> 197

<211> 624

<212> DNA

<213> Homo sapien

<400> 197

ttttactacc	tatattttaa	atgatccctg	acgcccctca	agacaaatat	attaattttt	60
ttactttgtg	ggatagagat	cagaaaaaga	gtagagatga	aaatactgga	gaaacaatgc	120
aggagatatt	tatgagggtga	gaatgtcaag	aaacttgtaa	agggagaata	ctataatgac	180
ccctgaagag	agagcttttag	accagttgag	tattagaggt	tgccacgtgg	ctattcatcc	240
actaataaat	acaagaaatt	actaaaatgg	aagccactgg	aaatatgttt	tgaggaaggt	300
gagaatgtgg	acctattata	aatgggtgaa	tatgatttct	ttctcattaa	gttcataaat	360
aactttcaga	catgtaacag	tttatgaagt	gtgccgtagt	catttagtat	aagttttata	420
cacaaaagtg	tttttactaa	gactgtcaca	ggttcttttg	tgaatcttgt	ttgtttttcc	480
tcattgtaaa	tactgcaata	gaacatttgt	gtcttaacat	aaggcaataa	atgaccttaa	540
gaaccttcac	ttttatatag	aaagtggagg	aaaagttggc	agagtaattt	gttgattata	600
gataaaagct	cttgtagaaa	ttgg				624

<210> 198

<211> 175

<212> DNA

<213> Homo sapien

<400> 198

tttttttttt	tttttttttt	ctaacactta	tgcatttatt	ttcatgtgta	agaagaaaaa	60
cgtaactagc	acgtgaacat	gactgcatgg	atacacggct	cagcacgagg	ctaaagtcag	120
aagtgagtga	aagcaaaacc	gcatgttgat	ttaagtgaaa	taacagaaca	gaaaa	175

<210> 199

<211> 871

<212> DNA

<213> Homo sapien

<400> 199

ctgttgatca	atgatgagct	cccaagagta	accagcctct	atatagtcag	catcactggg	60
ttctcaggaa	aagcatcacc	attgttcac	ttgctgcaaa	atgtatgcac	aagtatcttt	120
ttatttttaa	aaaagccctg	acattttatg	actgctgctt	ttctaagata	ttttcaaata	180
tacagtccat	acggttcaga	cacaatggac	tggggataga	gacggctata	gtgccgataa	240
tggagaaact	agccagagct	tcagatat	gttttccagg	acatctcaat	aattgggtac	300
acctcacaat	atgtgagact	tgacgtcgag	tggcacggca	tactctggcg	caggcacttg	360

ataaagactg	tgtttgcaaa	tacttagcct	gcacttcaag	ataccaggca	tctaagcacg	420
tcccagatgg	tgacagttaa	tcttcaaaaa	accctatgtg	gaagtattat	cattgtcctc	480
attttacaga	tgaggaaaaa	gagacacagg	gatgtcaata	tcttcctcaa	ggtcacacag	540
caagtaagtg	atggaacagt	ggctcagcca	tgaagctatt	gctgttaacc	actaggttga	600
tttgccttca	ttaatttctt	cctaaaactg	cacatttccc	gttagtccct	ctttttggtc	660
tgtcgtttga	ctcttggtta	ctgcttagag	gaagattcat	tctattattt	tctaacttag	720
taaatatgtg	caactccttg	gggacatgac	caggcaaaaag	ctggatacag	aaatgtatgc	780
ccaaacacca	tccaagtta	cccctaacag	gtcttttctg	gaccctgttt	gtaagggggg	840
tatatttgga	aaaattttta	aaattttctg	g			871

<210> 200
 <211> 737
 <212> DNA
 <213> Homo sapien

<400> 200						
gacattttga	aggtaacagc	aatatctgtg	tatagatggg	gttgtgggtt	tgttatttat	60
ctgctattgc	tgaactatcc	tttgtcttga	gcgataaaaag	agaagtaaaa	tactaaagaa	120
ctgaactgtc	catttctgga	ccatgagtaa	agatgctggc	tgtcaaactt	cctgttcata	180
cattagttta	tttatagagt	gtactctcta	tgttaaggat	tgactgataa	tgttactttg	240
acttcagata	gcttgcagtt	taatggagga	agaagacaaa	catgcaaata	actaggtcaa	300
tgaggcatcc	tttgtgttcc	attggaagct	aggctgcttt	gtaaccttgt	taatttctgt	360
ggttttggag	tgcattcatt	agcaaataca	ccccttggtc	ttatccattc	tctgcttttt	420
tctttatttg	gcatttgatg	acattttttc	atgtggggaa	attgagtcag	gtgaggtgga	480
aagaaaataa	ggacacgaca	ctaaattctt	tgatgttttt	ccttaaaaaa	ttgtttttca	540
agtgtcccat	aaagggttgt	gaagttttta	gagccatagg	acttggatta	ttgtgaaaga	600
gtgtctctag	ggggccaggt	taaaccattt	caaggactct	ccttctctca	tctcccttgt	660
tccacccagg	gtggcgaccc	ccaaaaagca	caaagcctcc	ctttcttcat	gggaagggtg	720
aggaacggaa	gggaacc					737

<210> 201
 <211> 493
 <212> DNA
 <213> Homo sapien

<400> 201						
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ttaagggtag	aagaaattaa	cacatgatgg	aaaagtcatt	gtgacgcaa	tgaatttcat	120
tgagtataaa	ctcatctact	tcaaatttat	tttataacac	aacctaaagt	actcaagata	180
attatttaat	ggttagctct	taagttgaat	tggctctacat	aatgctggg	aagaaaacca	240
gatttttagc	cttcttgcca	aatccagacc	tctggttgat	ttttctttga	cagaagatgc	300
aagttatttt	ccaatttcac	aattaaatgt	atttaacatg	aacattattt	tgcttttaaaa	360
actataaaca	ttgtaggaga	attatagcca	gtcttcagtt	ataaccactc	caccctctc	420
actttctctc	tctctctctc	tttttttttt	gctatgggat	ttaatgggaa	aaatatgtaa	480
aaactgtcac	taa					493

<210> 202
 <211> 283
 <212> DNA
 <213> Homo sapien

<400> 202						
cctttttatc	tcagtgcac	cgtccgggga	cgcaggtggg	ggtgactcaa	ggctagcctc	60
aaagggcagc	cccacctcct	catcctggac	cacagagacc	acctgcttgg	cgcgcgcgtg	120
cttttccgag	agggtggctg	actccggggg	gctggggctg	gggctgccgc	ccccgcgcgt	180

gttgctgtac	tcctcgcccc	agtcgatggg	ggctgccctc	ggacagcagg	tgcaggttgg	240
gggcactggt	acgcaagacc	atgctgcccc	gagaggtaga	tct		283

<210> 203
 <211> 713
 <212> DNA
 <213> Homo sapien

<400> 203						
ctgcttttgc	gcaagggtgcc	actggacgag	cgcctcgtct	tctcggggaa	cctcttccag	60
caccaggagg	acagcaagaa	gtggagaaac	cgcttcagcc	tcgtgcccc	caactacggg	120
ctgggtgctct	acgaaaacaa	agcggcctat	gagcggcagg	tcccaccacg	agccgtcatc	180
aacagtgcag	gctacaaaat	cctcacgtcc	gtggaccaat	acctggagct	cattggcaac	240
tccttaccag	ggaccacggc	aaagtcgggc	agtgcctcca	tcctcaagtg	ccccacacag	300
ttcccgtca	tcctctggca	tccttatgcg	cgtcactact	acttctgcat	gatgacagaa	360
gccgagcagg	acaagtggca	ggctgtgctg	caggactgca	tccggcactg	caacaatgga	420
atccctgagg	actccaaggt	agagggccct	gcgttcacag	atgccatccg	catgtaccga	480
cagtccaagg	agctgtacgg	cacctgggag	atgctgtgtg	ggaacgaggt	gcagatcctg	540
agcaacctgg	tgatggagga	gctgggccct	gagctgaagg	cagagctcgg	cccgcggctg	600
aaggggaaac	ccgcaggagc	ggcaccgcag	gtggatccag	atcttcggac	gccgtgtacc	660
acatggtgta	cgagcaggcc	aaaggcgcgc	cttcgaagga	gggggctgtc	caa	713

<210> 204
 <211> 275
 <212> DNA
 <213> Homo sapien

<400> 204						
gtagacaagt	acagcagatc	cagacaccag	atctagctag	gctaaatgta	cagtatctaa	60
cttgatctga	actgaacctg	tattccttga	tgatgcctaa	aactacatcc	atagaattct	120
ggtgaaacctg	taatacagtt	ctgaaagtac	agttttatat	aataagatgc	tgatctcttt	180
attctttcaa	gtaagagtgc	tagagaacaa	attgtgttac	ttgccttggg	atttattgaa	240
cgtctggaaa	atgctgtctt	cctagatcca	aacag			275

<210> 205
 <211> 694
 <212> DNA
 <213> Homo sapien

<400> 205						
ctgttctctg	acattttaat	gaaaaaaaaag	taacttaaaa	taatataaaa	atagcactca	60
tgtatgtcct	acagttatag	gtgaaatttg	atattgtttg	tcttacatag	catacctata	120
gacagcttaa	gtaaaagtgc	tgtaaagagg	gttatgctta	ttgatgaact	cttgtagtgtg	180
cttaccagct	ctgttagtat	agttaaattg	atctcagtag	cttcaagtat	ttataaaatg	240
gttgaagtcc	aaatacatgt	gataattaca	atacactttg	aattaatgga	gggtgggagg	300
ctagttgaaa	tgcattttat	ttacccaagg	agtatgttaa	aatgatagtt	ataaatgttg	360
gaagtttaaa	gcaagatact	cagtttagtt	ctttacaaat	cataagaaga	acaaaattag	420
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cacaatgggtg	ttagctgggc	agaaagagtg	gcattctctg	ctaccgggct	gggggcgacc	600
tttaccatag	gatgaagtaa	ccttgcattc	ggctgcaagg	tgtactgtac	cgtacacagg	660
tgctgggtcg	atggccactt	tctgcttttc	tttc			694

<210> 206
 <211> 704

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(704)

<223> n = A,T,C or G

<400> 206

tttttttttg	gnaaaaaacag	ggtttcatca	tgtttgccag	gctagtctca	aactgctgac	60
ctcaggggat	ttgcccgcct	cacccaattc	aactttcgta	agtcagtatt	taccatctaa	120
ctcagtgtcc	caaaatttaa	aatttccttg	cactttacag	caaaaataca	tattggggct	180
ctactgaagc	aatatataca	tgtcaaaact	aaaaatcaga	aaagcaaaag	ggtcattca	240
acatatagca	gcttatattt	aaatatgtac	aggtatgtat	gttttcacag	ttagatcttt	300
aaaaaaattt	atatttgata	tggtcaaaaa	tacttctatt	ggctataaat	aatattttta	360
aagctcaact	gatcaaaatg	cattccaaga	acatatcaaa	ttaaataaat	cttctacgtc	420
tttaaaaaaca	gataattgaa	gtcagtaaag	cttgaggttt	gtgttaagtg	tattctgtca	480
gtccctacta	ctaggggaagg	cagaatcttc	taaatacgat	acgaaagaaa	ctcccaaagc	540
ttggaaggaa	tcggcagctc	ctgaactttt	tggggggggc	atccctcttc	gggattgaca	600
tgcgacataa	atgttgcaag	ctaagggacc	cccccgggg	gagtggggcc	caaaaaaac	660
cacaccttcc	ccgtcaatgg	tggtccccc	accaacctta	aaaa		704

<210> 207

<211> 225

<212> DNA

<213> Homo sapien

<400> 207

ccattttaac	tgtactgcc	atagaattct	ggaattgtgg	aaaattgtat	cattgaagtt	60
cagtaggatg	tgtggcctaa	aaatttatca	ggaccacaaa	aaagaaaaca	aaaatatttg	120
gtactgaggt	tcattgccag	ggcaggaggt	atttccagaa	aatactcatg	cctgtgttct	180
gttccttgct	ttcccaaata	ctgcatgtga	ctttcctaag	cggca		225

<210> 208

<211> 678

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(678)

<223> n = A,T,C or G

<400> 208

cctatatcta	tcaaaaaaaaa	tccagttcct	aactaataat	ctcccaaaaa	gaaagcacca	60
ggaccagatg	atataaatgg	caaatttttt	caatcattta	aggacaaaat	aataccaatt	120
ctgtatcatt	tcttccagaa	cacttcctaa	ctcatcgat	gaggccagca	tcactcta	180
agcaaaacca	gataaagcca	ttacaagaga	gagtgacaga	ccaatgtggt	tttattgagg	240
atgcaaacaa	aatttaacat	aatattta	agtgaaaaac	tggatgctct	ttccctaagt	300
tagagattaa	ggaaagaatg	tccccttcac	tactcccata	caacacctta	ctgaaaattc	360
tagctagctt	tataaaataa	anaaaaacca	naaaaataaa	taaaagggtg	acagactgga	420
agatacagtg	aaggaggaag	aaataaaatt	ttctttgcgc	ataacatgat	tcttctatgt	480
ggaaatcaca	gagatttgaa	catttttttt	ttttgagaca	gtttttgctc	ttgttgccca	540
ggttgagtg	taatggcgcg	atctcggtc	actgcaacct	tcacctcccg	aattcaaggt	600
gattctcctg	ccctcagcct	tcccggagta	agcttgggga	ttaacagggc	atggcacccc	660

ccatgcccc agctaaat

678

<210> 209

<211> 720

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(720)

<223> n = A,T,C or G

<400> 209

attatatttga	accctagcat	ttagaaatga	aaaacttttt	ataacaatca	aatacatgat	60
aaagtatgca	aagagtagga	aattattctg	atgacatatg	gaggggttaca	aaggagaaaa	120
cttttttgcta	cctctgataa	agaatagact	aaattctcca	agaccaatct	gactgggtgtc	180
ataataaaaag	gaggtagaca	cggaaagcaca	agggatgtgt	gcctctggag	gaaagggtcag	240
gtgaggactc	agtgagaaga	caagccaagg	agccaggtct	tggagaagaat	caaccctgtt	300
gacaccttga	tcttggaacta	accctgtgga	caccttgatc	ttggactttt	agcttccaga	360
actgcnagaa	aataaatttt	tcttgtttaa	gccaccana	gtgtantgtt	ttgttatggc	420
agccctaaca	aattaaaatt	atattttaac	agagaatata	aaattctaata	ataacatttt	480
acagtaaagc	attcatgggc	ttttttttct	tattaataaaa	tccatcaaaa	cagaaagtgtt	540
tgcaaaattt	taacacattt	ctctaccact	actgtttcta	ctctcttaaa	actactccgc	600
aaatataaaa	atagaaggcc	aaaatgcac	attaaaacga	tgtttgggga	ctaattggcct	660
taaaattcta	ttacacttgg	aaatatacaa	atattcaaag	attatctatt	gatcacctca	720

<210> 210

<211> 277

<212> DNA

<213> Homo sapien

<400> 210

tccatgtatt	tttatacaga	atggaacaat	atgtatgtat	gcaatyktta	cattccacca	60
tgaataaaaa	cagtataatg	aaaataacaa	tagattcaaa	caatgatatg	ctattttttt	120
ttacctatga	cattggcaag	gtcttcttaa	aaaatctgca	aataaccgat	gttggagaga	180
tcatggggaa	atagccactc	aaatgttact	catgagagtg	tacatatgtg	taacttcact	240
tggagggcaa	tttgggtgata	catttaaaaa	gttttgg			277

<210> 211

<211> 715

<212> DNA

<213> Homo sapien

<400> 211

gtggtagaaa	tactaatttt	gcaattacag	aaaaaaacaa	atgccattca	catgggttyct	60
aacaaaaagt	gtctgaccac	ccccaccccc	caccttcaa	aaagccctta	aataaagagg	120
aagatcaaaa	gaaaacaaaa	taattcccga	gtttcacctc	atacatacaa	tatagcacag	180
gaagtggcaa	agtttaaaat	aatgccttta	ctgttaggac	tagtatgctg	tcaaaagcca	240
caatcctttt	gttttagtga	gttgattttc	aatagaaaaa	tacaaatgaa	catgtgttta	300
agttccaaca	tggattgagc	acctctgaat	ttagtatcaa	atgattaatt	ttatttttca	360
gatgtcaaat	cttagtataa	aattttccat	tattttaaac	ttcacttgaa	tctttaaaaa	420
agctgtctaa	attgtactat	atgagttcag	tttaattctc	tgtaaaatgc	taacaaattg	480
aactgtcagc	agtcttttaa	aaaaaaatgg	gggctgggtt	atttctagaa	gaactctcat	540
taagctttga	aaatcagaaa	tcagagacaa	ataacttcag	atatagacta	gtcccacaag	600
caaatttata	caattatctg	taacagtcta	tacatatatg	tgtatatata	tataccgtaa	660

ccacttttcat aggtaaaaaa tattaacttc atgtcacact atgatcagaa gtata 715

<210> 212

<211> 717

<212> DNA

<213> Homo sapien

<400> 212

agcctccccc	aatgccttaa	aaggtcacag	tagatctcag	ctctgaacag	aaactcaact	60
gaaactcttc	ccacaaccca	gcagtagata	tattaaaacc	tacaattttc	agggatacaa	120
ccaatattta	attcttttga	gggttttgtg	tttaatacaa	ggacacaaac	acacgtataa	180
aatgacgatg	tcaatactga	ttaaacagaa	caacaaaata	agaagctcaa	attatcatca	240
gctatttgtg	atatctgaaa	taacaataat	gcacttgatt	ctgaaagaat	gattagagtt	300
cctactctga	aaatctaatt	gtcttgatgt	ggcgaagtga	gaagaaagga	tgatttttct	360
aatgaaaagc	atgtatacgg	gtagcccttt	gcgagattct	gtcaaaaccc	tgaattttgc	420
attagctggt	ttaccaccca	aacgttttta	cccagggatg	tgcagcaatg	ggaactctca	480
tacactgctt	gtgggaatat	aaatcagtat	aaccactttg	gaaaaccatt	taacattgtc	540
aactacagct	ctacacacaa	gtgctataac	caccctattc	actccagggg	atacacccta	600
aaaatatgaa	gtgcccattg	ctacccaaaa	ggccgcctaa	aaggaatgct	tttgagaagg	660
gttaaccttg	ttaattagtg	gcaaaactgg	gaaaaacaac	cccaaatggt	cccatcc	717

<210> 213

<211> 599

<212> DNA

<213> Homo sapien

<400> 213

cctgtttttg	cgaggcagga	gggaagcggg	atgggagtgg	tgggttaggcc	aagggtagtt	60
caaagcgatt	cagcaggatg	atgaccacag	gagtgtctga	gccgggcctt	tcagcccccg	120
tgtggatgat	gaccggccat	ccaggacatg	cgagggcttg	ggacagtgga	cagccagtgc	180
cacacaagga	aggaccgatt	aaatgacaca	gttaaaggaa	tttggcctag	ggagtgcgaag	240
ccagaaaagg	ttgggtcttt	tatatatgta	acattggaaa	aaaggaacat	ctcctgttcc	300
ctgtattaag	ttttgacttt	agctcagcaa	atgcagtgtt	tgtggcagta	aatatactct	360
gataacaatg	ttctttccca	ggaatttaga	gttttatgat	ggttattgaa	aatgtttaca	420
tgacaggctg	tcaataatat	tttttgcttc	taaaaataaa	acatacataa	agtgtacgga	480
ttttaagtat	gcaactcact	gaacttttca	taccgtataa	caccacccta	gtaaccctcc	540
cccagttcaa	gatgtagact	gtttccaata	acccctcatc	ctgttcctta	atagcccc	599

<210> 214

<211> 789

<212> DNA

<213> Homo sapien

<400> 214

ccttatgaca	aaccttgcta	tgccaaggat	atgcttcact	atcttcatct	atcaaaacac	60
tatgcatcat	agatatctaa	ttttttcatc	tcttgcata	agtctttcct	gattttccctc	120
tgctgaaatt	tctctcttca	aatgatgtgt	ttccatagta	ctttgtccct	tttcaaagat	180
atatctcaca	tcgcatattt	taccacagtt	agtttcattt	cttaactctc	acactagatt	240
acaaagtcaa	tatagacaaa	gaaatgttca	accttatata	acctcctctg	cctatgctgg	300
taaattgcac	ctactatgtg	ttcaataaga	gcttgtcttt	ttcaatatac	aaaactttgt	360
aaagattaaa	gaccttgtag	aaagtcaaga	ggaagatagc	aatttcactt	ctaagaactt	420
accctaagga	aacattcatg	aagagataca	aggggttatg	tgcatggatg	ttcattatca	480
tattattctt	cattatgaag	attatgatgg	taataatgaa	aatgattatc	ttgtattggg	540
ccttatttga	agtcaagcat	tgagaatgta	ctttatctgc	attatctcac	tgagttctcg	600
tagcagccct	ataagggtaca	gactgttatc	taagcttaaa	aaaataaagt	taatgtccaa	660

gggtcaaacaa	ctagtaaaaag	aaggggggcta	ggaaatttgg	aacccccaaaa	ggggcaacct	720
ctcaagggct	atgaatcctt	accattatta	taaggaagct	tggcccatgg	tggcccaaaa	780
aaaaccggg						789

<210> 215
 <211> 765
 <212> DNA
 <213> Homo sapien

<400> 215						
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gagtctgagt	atcaaagact	tgtattagag	agggttgttg	tagtaatcta	gtcagggtat	120
gagaaatgg	ttgtattaga	gtgtcaggag	tagtcgtggc	aaaaatata	agatcaggat	180
gagggatggg	cctcatctca	caccctgact	ccagtcaatg	gcagtggctc	cctggagtac	240
actactatag	gaaggatttt	gtaaaagttt	gtctggcctc	agtggagggt	gaggtagggg	300
aggagttcta	tgaacagtta	gtggtgtctg	ccatggttga	aacaatggag	aagggggaca	360
ccttttctgt	gcagatgttg	cttctggtag	atataatcca	caatgtaatg	ggagaagtac	420
taagaatcag	ttaattatgg	agggtgtaaa	agactactga	tatttaagcc	tgcggaccgg	480
acttagagaa	atgatagtta	aaggagaaat	atccagcaaa	caaagatatg	acattgaagt	540
ttgggactgc	gatttagtacc	agagatttgg	attggagggtg	atttgtatag	aatggatagg	600
tgattttact	cttgcaattt	ggattgaggg	gtggggaaaa	ccagaaagg	gctggggggg	660
aaattagtag	aaggtcacct	tgaattcatt	gtggtccata	tcaatgctga	aactgattgg	720
ggaacttttt	actcttgagt	ccctttgtaa	gggaacccca	gaaaag		765

<210> 216
 <211> 780
 <212> DNA
 <213> Homo sapien

<400> 216						
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ttaaggggtg	ggtcagaaca	tgttaagata	acttactgta	tatgtattcc	cttgtatttt	120
gttaaagctg	gaacatttga	tatttttcca	tttatttatg	aaaaaatatg	aacctatttt	180
cattttgtaca	aggtaattgt	tttttaaagc	aagtcacctt	aggggtggctt	taattgtata	240
agtcaagcac	atgtaataaa	ttcaaaacct	gcagttaaca	ggatattaga	catcaatcct	300
ggtaacccaa	tattaaagat	tctcttttaa	aaagactgaa	catgtttaca	ggtttgaatt	360
aggctaaaag	gtcttgcagt	ggcttttcat	ggcccttcaa	attggaatgg	aactactgta	420
ctttgccatt	tttctataaa	tcagtacttt	ttttttaatt	ttgatataca	ttgtgtgaaa	480
aaagaaaatg	gctaataaac	tgtattaaat	cttaaacat	gtataaagat	tgcacttagc	540
cagttcaaa	gtataactta	ttcataatga	attataacag	ttatatttct	gtgttttctt	600
gtaaatgttt	cttttccctt	aaatacagat	aattcatttg	tattgcttat	tttattatga	660
gctacaacaa	aaggacttca	ggaacaagta	atgtattagt	atggttcaag	attgttgata	720
ggaactgtct	caaaaggatg	gtggttattt	taaatataaa	tagctaattg	gggtggtaaa	780

<210> 217
 <211> 810
 <212> DNA
 <213> Homo sapien

<400> 217						
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attcgagggt	ataggaagg	ccctgtgaag	ttgatttaac	ttttggatgt	cagactgtga	120
aagctcctga	gaaacttggg	gtaataggat	cttcttttgg	ggatgaaaat	ggggaaggcg	180
tgaggaccta	gactacttct	ccctaggtca	gaaaaagaga	attaccctt	gacaaatatg	240
atacctgcta	ggtatttccc	agggaaattt	agggattggc	gtctttccct	agcatgtgga	300

ggaattggca	gacagcttcc	taagggcggg	gagcgggggc	ccaaggctga	cactgcttgc	360
atccacgtga	ccttaagtta	tggcagatga	ctctgaaacg	gactgaggcc	aatgagaaca	420
gatggatgga	gcactcaggt	tagacttgtt	ccttctccta	tgctggagga	gagggatggt	480
tctctagaat	gttgagggtg	agttgagagc	tgcctctctg	aatgttgaac	agtgtactct	540
tctgaaaact	gcatattcac	tttatgtggt	ttcagaatac	tgggctcaat	actaacataa	600
gaaagacact	tcattgagaa	attcttaagc	ttacagaaaa	cctatctctt	tgcacattcc	660
acataacccc	tagcaaaatg	caggttcttc	atacttctgt	cctttttcca	ttggaagaat	720
tgcttaagga	aaaattaatt	cctatttatt	cccacaaaag	gttgggcatt	gctttgattt	780
taccccatgg	gggaatgtgc	ctttgaattt				810

<210> 218

<211> 817

<212> DNA

<213> Homo sapien

<400> 218

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gtggcttcca	agtaccggct	tttgctgaag	gtctacatgg	gaagaagagc	atcattttgat	120
attcagtaga	tctgccacac	ccaactggct	ccatctcctg	gaaaacagca	ctcactacaa	180
gcaactgtaa	tagcaccag	caatgaccac	gctgctcctg	ctggctcttc	cgtacaccag	240
taaatgaact	caccaatgta	ttgcacacat	acatttcaca	gtagtacaat	aaagccctgt	300
atcaggagtg	gtaattcaat	gacttgactc	tatagtgcac	tgtagcttta	tgcatacca	360
acattcaaat	attcaaatat	ccttccaatc	catttgga	aaaatacacc	atggctgcca	420
agacacatgt	atcttctctt	cttccatgga	ctcctaaact	gctcccacaa	tcagcagtgt	480
tcttctctca	gaaattatct	taagcttctc	tactcaatgg	gaggtacaca	cagagacctg	540
agaatatgca	gaggccagaa	tctctgtctg	tgctagagat	caactgtact	ctgcccacct	600
ggggaacaca	tcctctgggt	aaagtactcg	gaagtaaatt	acattccctg	gagacagata	660
cgggctttca	ctgcagcctg	ttagaaaaca	caatgtctgt	aagttacctc	ataggtcaaa	720
gagttttgga	ttatattttt	cataatgggg	ctatggcctt	tttaccctgg	ttttaatata	780
gaaccacctg	cagaaaggac	attgaaatta	aaagcca			817

<210> 219

<211> 661

<212> DNA

<213> Homo sapien

<400> 219

ggatgctgag	gcaggaggat	tgagtcctgg	agtttcagga	tacagtgagc	tatgatcatg	60
ccattgcact	ccagcctggg	caacagagca	agattctgtc	tctaagaaaa	ggaaaaagaa	120
aatgaataga	tagtgggtatt	agatgttaat	gacatcagtt	gtttttattc	tttattcttt	180
cttagaaaca	gattagtttt	ctcgaattaa	agaactacca	ttttcttttt	ttctacaact	240
ttcaagagct	ggtgaagaaa	tgatgttttag	atttaataga	tatagtagca	gtcatatatt	300
aatagaatag	aaactgagac	tctaggaaaa	agatagacat	gagataagga	gtaggcatgg	360
tagacatttc	tagattattt	atgaaaatgt	tgtagaattc	attttttttt	ttgggtctgac	420
ctttggcaat	ggtgctgagg	aagggaaagc	cagcccatca	ggcaaggctc	tgttttctgc	480
attttatccc	gtttgattct	tctcgttagg	attggagcaa	ataatttcaa	tatgttcttc	540
gctgggttta	tcatagtac	ccttcattta	aagggacttt	taacaattga	cttaaagaac	600
actgagatgt	gatattttat	tgggatttga	aagttgccat	tgggtttttac	cttccttaat	660
t						661

<210> 220

<211> 792

<212> DNA

<213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(792)
 <223> n = A,T,C or G

<400> 220
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 ctgtgggtct tgcagacttc agatgttgga attattagtc gtggcaagng nncaaaacat 180
 tagctattac cattatgttt accaactagt gaagtgaact atgagaggat atattaacca 240
 cagaagttaa tagaagaata gactcctgaa aatatctgga tgctacaaac taaaatatag 300
 tatataatcc ttcatagagt gtcagtgact tcatatttat aattacattt ttgtatatta 360
 gcagtgttct agttcttact gccttatctt taagctgann nnaaataaaa ttatattttg 420
 ggattcaaaa acacatagct aatgattact atgtggcagt gttacattac tttatcacat 480
 atcattaaca taatctgcat gtgttcaaag agatcttcat acttctttgt agctccact 540
 tctttgtcgt ctttgtagct cccacaacat ctagaacagc acaaccgtat atggagaaaa 600
 ctacagtctag tattcgttga atgactaatg gaaaatttag ttntataaca gaactttctt 660
 cattgnacaa attatcttgc agaagaataa tggccttagt ttaaaattat catattttacc 720
 catntcncca ngttatttta tctcttttgg ctaanaattt tgaaaacggt accttttacc 780
 ctttggcatt tt 792

<210> 221
 <211> 759
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(759)
 <223> n = A,T,C or G

<400> 221
 cttttctgct gctccgggag gtggagtggc ctggcagagg gcacatggct gccacctgct 60
 gcaaggaaaa ttctcagtga agactcctca gtatgaagga gataagcctg cacaatcagt 120
 cactgataga tgcttagtgg aaaaacttcc aattcccatt tacagctctc agagctagga 180
 ttaaaaactc ctggtcataa actcatgtga tgagaagtta tagcacgcc tcattttcta 240
 catanccact tgcatttatg gttggctttt gaacttgcta gaagggaaaag aagtgcaaatt 300
 gtgtcctcct tagagctact ctccctccct tgggtgggtt ccagtttgtg cattgtccag 360
 atggcccagg agctgacgat caaagggaag aagtcatgtt tgtcatgaga atgctttgct 420
 gcatcaggat tcagtgaagc tgttcaccgc ctggagccca tgcagcctca agaggcagga 480
 tggagctcag aaaccatcac tgaggttaga aagtgagcac caaagttgag ggaagcccac 540
 aggagtgagc cgaagtgtc cctttggatt tccaaagtgg gtgctgctgc ttcttccatc 600
 agccttgctt ctgaccccaa tgcgttcctg gtgccttctt cttggcattt tgctgtcggg 660
 ggcccaagga aaaaaattcc tgcattggcag tggtgaaaaa agatggctgc ctgctgaaac 720
 ctgatttggc ctgggtaagc cttttggagc cccggttaa 759

<210> 222
 <211> 699
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(699)
 <223> n = A,T,C or G

<400> 222

ccttntnaag	agttggcatt	aattcttcac	taaatgtagg	agtagaattt	atcaggtaag	60
ccacactgac	ctctggnctt	nttnncgccc	gatgatTTTT	aattagttga	atccctttac	120
ttgttatata	tgtattcata	tattctgttc	cttcttggat	ttacttttat	gattggtgcc	180
tattgaggta	tttatttcta	gtttgtggta	cttcatgtgt	ttaggttttc	tagacagtgg	240
acatagaaga	ttcaagaagc	taaatgtagg	agaatgtnta	atgtaggana	ntgaggcnac	300
natacatca	atgaatgact	tgaagtttcc	tctgttgtaa	agaatgatat	taccataact	360
gccatagnta	atattgatgg	tgttaagtcaa	ataanaaggc	aggaggaaa	ggacatccat	420
cactgaacca	canatcagag	nctcattgaa	gcctttgaga	agaatccaca	aaattttaca	480
ggataattca	tttctgcga	tcaccacnag	aagagaaact	ggttaaacag	acagggtattc	540
cagagtccaa	aaattttacat	ttggtttcng	aaccaaagac	ctcagctccc	agggcacagc	600
aaaagggggc	ttatgaattc	cctggcacc	agncccaaga	cccaanaacc	tcattcttgat	660
tggtttnggg	cttgggaaac	caaaaaacca	atgggtggc			699

<210> 223

<211> 598

<212> DNA

<213> Homo sapien

<400> 223

aaaaagagaa	agtttcagat	ttgccattca	aggcttattt	atatatatgt	gtgtgtatat	60
aaatacatgc	acacacttgc	atacatatat	atttttggct	gggggagtg	gagttttgcc	120
tttctaaggg	agggaaccgc	caggctcctt	tgttctgtat	tctggcggag	atgggtcctg	180
gccttgtgtc	actggcttat	ccttaaagat	catctcccat	cctccccagc	gccatctgtg	240
tgcagcaacc	agaaagggat	gaacttggcc	ctcttgccgg	cctggacaag	gtctcttcct	300
taccctttct	gttgccagtc	agcaacctgt	aactcacatt	ctcttcccag	tgaatccctg	360
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gatttatctt	taggccaggc	ttgcctccgt	acttatccct	gctctcccat	ttctctcttg	480
tttgagagag	aatgaggaag	caaagagtga	gaaagaatag	gggctgaaga	cggcactccc	540
agatggctct	ttctatcctg	ctcttctgtt	gaaacacacg	tgctgtgggc	ctcaggcg	598

<210> 224

<211> 501

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(501)

<223> n = A,T,C or G

<400> 224

aaacctttat	gatgacttcc	ttatgaatta	ctgaacgaac	actggaatgg	gactcaggta	60
tcttgaggac	atctctcaac	tctggcctta	gttccccctc	tgtaaaatta	gggtgccaac	120
taaatgatct	acaagggtccc	ttccagcgcc	gccattctgt	aattacatca	tgtgtaactg	180
tattaaacat	acacaagtga	ctgccaggca	tgggaatgta	acttccgagt	aaatgctttg	240
gtttgttcag	aatacactat	gaacttcttt	ccaaagacgg	gttgtggtaa	atagtggata	300
ttttgattat	aagaaataga	gtttccttga	agcttttagct	ggagatacag	caatagtgtg	360
gtgttcctac	aaatatcaca	gtgtattcaa	acatatTTTT	ctatcaaaaa	tcatttttgt	420
aaaagctgtg	tgtttttatc	caacttgtga	taataaatgt	tctttatttt	agaacaaana	480
aaaaaaaaaa	aaaaaaaaaa	a				501

<210> 225

<211> 295

<212> DNA

<213> Homo sapien

<400> 225

cctgtatagg	gctcgtttcc	ccacacatgc	ctattttctga	agaggcttct	gtctttatttg	60
aaggccagcc	cacacccagc	tactttaaca	ccaggtttat	ggaaaatgtc	aggaaaaaaa	120
aaaaaaaaaa	cacatgcact	cacacaatac	ccaaacatca	raattagaag	ggcataaaac	180
agggggcttt	ataggctgaa	aaatatctta	ratttcaraa	cagaatacca	atcaaatatt	240
gaaaattcct	ttgttcaaaa	cacaaagatg	ttttgttttt	aatgggagtt	ttttt	295

<210> 226

<211> 372

<212> DNA

<213> Homo sapien

<400> 226

agattccttg	cttagagcat	gcgagcattg	aaggaccaat	agcaaactta	tcagtacttg	60
gaacagaaga	acttcggcaa	cgagaacact	atctcaagca	gaagagagat	aagttgatgt	120
ccatgagaaa	ggatatgagg	actaaacaga	tacaaaatat	ggagcagaaa	ggaaaaccca	180
ctggggagggt	agaggaaaatg	acagagaaaac	cagaaatgac	agcagaggag	aagcaaacat	240
tactaaagag	gagattgctt	gcagagaaaac	tcaaagaaga	agttattaat	aagtaataat	300
taagaacaat	ttaacaaaaat	ggaagttcaa	attgtcttaa	aaataaatta	tttagtccgt	360
atgaaatgaa	at					372

<210> 227

<211> 599

<212> DNA

<213> Homo sapien

<400> 227

ggcccccgctc	gcgggagccg	cttcgggcct	tctgggcatg	tctgccatat	ggctccaggt	60
ttgtttttct	ccccggcact	ctgacgggga	gggctcccgg	catctcctgg	catccgggta	120
gaggacgcgg	aggatgctga	gctgctggcg	cactgcagca	caactagaga	tgtacggatg	180
cccccatctt	gatcttacag	aatcagagggt	acagccgcga	gaaagagtca	agaacagaca	240
gagtcgcttg	aggactcagg	agggtgtttg	ctgcgttgac	aacagactac	accctcacag	300
tttgcctctgc	tcttccaaca	ccagtggaag	atgatcacat	cccagggatc	agtgtcgttt	360
agggatgtga	ctgtgggctt	cactcaagag	gagtggcagc	atctggaccc	tgctcagagg	420
accctgtaca	gggatgtgat	gctggagaac	tacagccacc	ttgtctcagt	agggattatgc	480
attcctaaac	cagaagtgat	tctcaagttg	gagaaaggcg	aggagccatg	gatattagag	540
gaaaaatttc	caagccagag	tcattctggaa	ttaattaata	ccagtagaaa	ctatttcaat	599

<210> 228

<211> 343

<212> DNA

<213> Homo sapien

<400> 228

aaagtaaatt	gtatgaaaaa	ttcatttctt	caattgcatt	agccacattt	tgagtattca	60
tgtggctggt	agattctgta	ttagcacaaa	gatatggaac	atttccatca	ccacagaaaag	120
ttctgttgga	cagcactgca	ttagaatatt	ttcatactgc	tcttctctcaa	ttaatTTTTg	180
ttgttaatgt	tgatgtcttc	attggatggg	tcataatgtt	ccatgaaacc	gctcaagtac	240
acaattgtat	gttcttttga	tcctttacca	caaatatctc	gctctgctca	tttcttttgc	300
agcttcctat	aaagtttgtc	ttcctcaaaa	aaaaaaaaaa	aaa		343

<210> 229

<211> 417
 <212> DNA
 <213> Homo sapien

<400> 229
 ctcaagctgc agtccaccgg gtatggttct ggatggttcc cccaagggag caggtatgta 60
 ggaggtgaag aaaactgaga ttccaagtat gggagagttt ttactatctc cattcctgga 120
 ttaaaagtgc tgaaaaagtc cacagttaaa cattccttta ttcaccctat ggctcccaag 180
 aaaagcattc ttctcttgga gtactgggtg actaagggga caatacacca aatttggtga 240
 gtttacaatc aagtctacta aggttggtact tccttatcag ttggcagag tcccagggca 300
 gaataatcat ccatctacag gtctctgttt cctctccctc cgcagcagtg gagagcatcc 360
 cagtgtttgg ggcaactgtg tcctcttcgt ccctgcacca gaccctggaa gccttgg 417

<210> 230
 <211> 462
 <212> DNA
 <213> Homo sapien

<400> 230
 gaaataccag aagagaaagt ttcattgtgc aaatctaact tcatggcctc gctggctgta 60
 ttcccttatat gatgctgaga ccttaagtga cagaatcaag aaacagctac gtgaatggga 120
 cgaaaatcta aaagatgatt ctcttccttc aaatccaata gatttttctt acagagtagc 180
 tgcttgctctt cctattgatg atgtattgag aattcagctc cttaaaattg gcagtgtctat 240
 ccagcgactt cgctgtgaat tagacattat gaataaatgt acttcccttt gctgtaaaca 300
 atgtcaagaa acagaaataa caaccaaaaa tgaaatatc agttttatcct tatgtgggcc 360
 gatggcagct tatgtgaatc ctcatggata tgtgcatgag acacttactg tgtataaggc 420
 ttgcaacttg aatctgatag gccggccttc tacagaacac ag 462

<210> 231
 <211> 328
 <212> DNA
 <213> Homo sapien

<400> 231
 ctgtgggttt tcctaaacgc ccctcatctg gttgaagccc tagtgtttct ttctcacatc 60
 agaggcaaat gcattggggg gggctgtggt tggacaataa atttcctctg gtttggacca 120
 agaaaaacag agttctttga ccgctaacat atatgtaaaa agaaagtgtg taaaaacaag 180
 agttaaaatg cttctaacag tgtggtcac actgcacagg acactggaat tggcattcgg 240
 ggttggtgct gtccatgtgg ttctgttgta tgtcatgtgc tctcagctca gacagagaca 300
 tccaattgac ttctgacttg gggcattt 328

<210> 232
 <211> 595
 <212> DNA
 <213> Homo sapien

<400> 232
 cgccaatttt agcaaataag agattgtaaa agaagcagat tgaatgaaga attttttagct 60
 gtgcagatag gtgatgttgg gatggaaaat gctaataaac taccctttct tttatcaagt 120
 aattaaaata aatctacata aagaacaaaa aaggctgttt tataaaagtg aaatatccag 180
 tatttcagag ggccaggcaa gagcacttca gatgaggcag tcaaaatcat ttttttccag 240
 tgaggataga ccacaagtgg gtggtgagac cattgaaagc ctttatcaac tgaagagtcc 300
 atttaacagc ataatttgtg ggaagactgg aatagggtct aataaatgtg tttgaatctc 360
 taattttata ctttcttttc ctgaggaact tgatttttct gtccttggat cgccttgtca 420
 taattgggtc tgttcctttt actaccactc ttgagtccat atatgaaatc attaaagttg 480

gatgatcagt	tttttataaa	aatatatatt	tttgtccaag	aaaaaaaaa	gcatacatat	540
gtgattatgg	ctaaatcaaa	ggtaactgga	atgtatatac	ttttgcta	gttcc	595

<210> 233
 <211> 600
 <212> DNA
 <213> Homo sapien

<400> 233						
atgaaggtaa	actctaaaat	cttcataagg	caacaaagaa	aattttatcct	tcacacttat	60
ttctagaaag	cagcagggct	tatttcctag	attgcttaca	atgaagctag	aatatctgcg	120
ataactgtag	agttttcaaaa	aggatcccta	gggctacttc	tacgttctcc	ttaccagttg	180
agcactctcc	ataatttcca	gacgggtcat	gggggagaat	gatagaaatg	agcgtgggaa	240
gaaagacaat	gaaattagaa	atgggtgaga	cacatggtgg	tagaatgcta	agagcagggg	300
tcaggacaat	caaccaggtg	tctaggaagg	gtcaagtcac	cagtgtcatc	tgctgaccaa	360
tgtttaggaag	aaataaactc	aaaggaaaca	ccacattttt	ccaattaaac	tcaaattctat	420
tgacttggtg	tggttctttg	atggttggtg	gactgctata	acagaaacca	attggatttt	480
caagggcaag	aaactttgcc	actgaataag	atgatgtcat	ccttcctgat	aacaaatagg	540
aatgggtggt	cagctctaaa	cagcgtggac	tgaggaggtt	gcttttctac	aatattactt	600

<210> 234
 <211> 500
 <212> DNA
 <213> Homo sapien

<400> 234						
aaatttcctaa	ttcttttact	atctttctcaa	cttttcccaa	agataaaaata	aatttcacat	60
aattttcatgg	aggggaaatg	gtagttgtaa	aaaactacct	caagtagcaa	tcaccgctgg	120
cagtgttttc	tcactttctg	ttctgcaatt	gcaatcacac	ttccaaaaag	aaaagcaaat	180
gtttgtctaaa	ccatagacag	acaacctctt	tgtgactggt	attataaggt	ttataatgaa	240
aacttatcaa	atataaaaagg	tgctccctct	tgaaaaatgtg	tattttattt	gaagttttga	300
gtaagaggtg	agtgtttggc	aattttcaac	actccctca	aaaatctccc	aaagttgcaa	360
aaaagtcagt	ttagtaaaat	tccaagcact	taaatgcttc	attgagggcc	agttgatata	420
cgcaatgcac	taatgtgtaa	aaattaaccg	aatgcaacta	ttttataatg	gagagctctt	480
accttttctt	tccagttttt					500

<210> 235
 <211> 159
 <212> DNA
 <213> Homo sapien

<400> 235						
aaaattttaca	gataaaggca	gttcaatact	gccactgaga	agtacatctc	ttaacatata	60
caactttcag	gccacagttt	tgaaggtctg	aagtattaag	ttggtttgat	gaattagtcg	120
gttggcactt	acgaacacat	ttattgcctt	gccatctttt			159

<210> 236
 <211> 254
 <212> DNA
 <213> Homo sapien

<400> 236						
aaataagtga	ataagcgata	tttattatct	gcaaggtttt	tttgtgtgtg	tttttgtttt	60
tattttcaat	atgcaagtta	ggcttaattt	ttttatctaa	tgatcatcat	gaaatgaata	120
agagggctta	agaatttgkc	catttgcatt	cggaaaagaa	tgaccagcaa	aaggtttact	180

aatacctctc cctttgggga tttaatgtct ggtgctgccg cctgagtytc aagaattaaa 240
gctgcaagag gact 254

<210> 237

<211> 591

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(591)

<223> n = A,T,C or G

<400> 237

tttttttttt tttttttttt tttttttcta atttttactt tttctcaagt ttaatgtara 60
catacaaraa aacatcaagc aatgtttatt gkgcaattcc aatcattatt tgcaraatct 120
tgggtttaaag tcagtyttta tagccatttc aactgcttgg tttaaacaaa aagcaacaat 180
ctgggttatyt acctataaat ttcattggtat ttytttaaac actgaagtac taaaagcact 240
gatgatttgt attataattt ttaaaatatt taaaacctac acagatttca taratcattc 300
cttttataaa ataatcaaaa taatttgatt atytggaaaa aaaaattctt gaaacaragc 360
cctttccagg tattyttcaat ctctgtaaaa ccccaaacc caaacagagt aratgatgaa 420
ataaggattt ctcagttgcc caagactgtc tgaaatttaa gggtgaaaaa tggactggcg 480
tttttcatgt ttcttngaa ttcanagctt acaggtggca tcaaaactca aatctctggg 540
atggctttac atggctttca ctttgatttg tttcattttc atttgcttct t 591

<210> 238

<211> 252

<212> DNA

<213> Homo sapien

<400> 238

aaatggcttt tgccacatac atagatcttc atgatgtgtg agtgtaattc catgtggata 60
tcagttacca aacattacaa aaaattttat ggcccaaat gaccaacgaa attgttacia 120
tagaatttat ccaattttga tctttttata ttcttctacc acacctggaa acagaccaat 180
agacattttg gggttttata ataggaattt gtataaagca ttactctttt tcaataaatt 240
gttttttaatt tt 252

<210> 239

<211> 153

<212> DNA

<213> Homo sapien

<400> 239

ccacaataaa gtttacttgt aaaatttttag aggccattac tccaattatg ttgcacgtac 60
actcattgta caggcgtgga gactcattgt atgtataaga atattctgac agtgagtgac 120
ccggagtctc tgggtgacct tcttaccagt cag 153

<210> 240

<211> 382

<212> DNA

<213> Homo sapien

<400> 240

aaaaaaacca tctaaaagtg gttttttaat atatatattt tttccaaagg aagaaatttc 60
ttgcttttac tcagggaaaa aaaaaaatta aggtacattt gagtagaatg atttcatcta 120

aaagagttct	ttcaggagac	atctgtgatt	cactgcattg	tttttatttt	cttctttttc	180
ctcttctttt	ccaacatttc	taccattttc	ctcttcttgg	ttgatatcag	gccactttct	240
tttggtgctt	tcttactgtc	acctgttaaa	ccgcgtttct	ttgtgttagg	ttttgaccgc	300
ttttcttctt	tgtgcactgt	gtcaccaggc	tcctttttgc	caattttgga	ctggtcttta	360
cttacaggag	aaggctctgc	ag				382

<210> 241

<211> 400

<212> DNA

<213> Homo sapien

<400> 241

ggcatgagcc	accgcgcccc	gccctatctt	ttactttttat	aaatagagat	gaagtttcac	60
catggtgccc	aggctggtat	cgagctcctg	ggctcaagcg	atccccaac	cttggccttc	120
caaagtgctg	ggattacaag	cgcgagccac	cgaaattatt	cttaactagc	aagactaggc	180
tctgacatca	catccttata	gttacatccc	tttaagcagg	gttcagccac	tcactctgca	240
cctggagaac	ttgatgggta	tccctcgaag	tgacagtcct	gcaaatagaca	aaaacactcc	300
aaatctatta	ggttgggtgca	aaagtaatta	cgctttttgc	cactgaaagt	aagtcccaca	360
ggaccctgag	ggaatatggga	gggtggggta	tacatagcag			400

<210> 242

<211> 75

<212> DNA

<213> Homo sapien

<400> 242

actcacatat	gcagacctga	cactcaagag	tggttagcta	cacagagtcc	atctaatttt	60
tgcaacttcc	tgtgg					75

<210> 243

<211> 192

<212> DNA

<213> Homo sapien

<400> 243

gctccacatt	tgtagcgaac	actttgactc	caaagagaag	gaggaagaca	aagacaagaa	60
ggaaaagaaa	gacaaggaca	agaagggaagc	ccctgctgac	atgggagcac	atcagggagt	120
ggctgttctg	gggattgccc	ttattgctat	gggggaggag	attggtgcag	agatggcatt	180
acgaaccttt	gg					192

<210> 244

<211> 616

<212> DNA

<213> Homo sapien

<400> 244

aatttttatag	caatatactg	accattctaa	aaataacaaa	atacatgttg	ctctcaacta	60
catagttaaa	aaaggtagta	aattctctta	cccaaaatag	aggaggggtg	ggctagtgag	120
ctgctcaaac	atttgtaaca	aataaaaatg	tatctatata	catataatga	tcattgtttc	180
atagcctaaa	atcaccatac	aaaatctaata	aataaaaattg	tgtcgtgttc	aggagttggg	240
aagccaacac	attaaattaa	caaagtattt	ttggtatatg	taaataatgg	gatagaatct	300
ctcgaatcag	gattgtccca	gaagtcttaa	ggcagatgtc	aatgacatgc	acattgtcca	360
tgttcagtaa	ttttcaaaga	ctagaataaa	ctatgtaaac	tattcaatac	aattcaatat	420
tacttaactg	ctaaaaagta	cttcaagatc	ttgactgtcc	ttgagttagt	ataatcaaata	480
tagtaattgg	aaaatagctg	taatagcagg	cactgaagaa	ttctgacaaa	taccaaataa	540

ctgtttgttt ttaccaaata aactggtaag atgatatcac aaagggtttt aagttatttt 600
gctatacaag gttttt 616

<210> 245
<211> 165
<212> DNA
<213> Homo sapien

<400> 245
ttggaacagt ggattaaaat ccagaagggg aggggtcatg aagaagaaac caggggagta 60
atttcttacc aaacattacc aagaaatatg ccaagtcaca gagcccagat tatggcccgc 120
taccctgaag gttatagaac actccaaga aacagcaaga caagg 165

<210> 246
<211> 229
<212> DNA
<213> Homo sapien

<400> 246
tgtactggat ccctccaggt gggggcgact ctcacctgac tattacaata gcctcctaag 60
tggtttccct acttgcaacc ttgcccgtat aatatctatc ctccacacag caggcagggc 120
gatacctttaa gaatagaagt tagatcatga aaatgctctg ctctgatccc tgcaaaaagct 180
cgccacctcc ttacagtcac cgctgaactc gtagcagagg ttcaggagg 229

<210> 247
<211> 338
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(338)
<223> n = A,T,C or G

<400> 247
ggaaaccgtg tgtacttata ctggatgatg ccaccagtgc cctggatgca aacagccagt 60
tacaggngga gcagctcctg tacgaaagcc ctgagcggta ctcccgtca gtgcttctca 120
tcaccagca cctcagcctg gtggagcagg ctgaccacat cctctttctg gaaggaggcg 180
ctatccggga ggggggaacc caccancagc tcatggagaa aaaggggtgc tactgggcca 240
tggnrcaggc tcctgcagat gctccagaat gaaagccttc tcagacctgc gcactccatc 300
tccctccctt ttcttctctc tgtggtggag aaccacag 338

<210> 248
<211> 177
<212> DNA
<213> Homo sapien

<400> 248
tgaaaacaaa tgaattctca actcctacgg ttcatgtaga gtttagagaa aatttccatc 60
attgtcatca ttgaactgtg aacctgggaa gccagatcat gattaacact gacatcaagt 120
ttcaagttgc agatcaatgc acccagtgtt cagatgaggc aaacttctcc gtgacaa 177

<210> 249
<211> 263
<212> DNA

<213> Homo sapien

<400> 249

aaagtaatga	ctttattaat	aaatatacat	ccatatgatg	atgtagatac	aatcatgaa	60
cactactcca	ttcccataca	cataattgca	cacgagtagc	tcaagttcat	ggacataaaa	120
acatacacag	tatctattca	gactttttac	agcagaggac	agcgtgctta	ttatcagtta	180
attggtaatt	attttctcca	aaattacctg	tggaaaaaag	aaattctgaa	aacttaaaaag	240
aatcaaagtg	atctgattac	ttt				263

<210> 250

<211> 333

<212> DNA

<213> Homo sapien

<400> 250

aaaaaaaaca	acagcgtaaa	tattagccca	caagagcagt	cctaaacaat	cacaattaca	60
ctgtactacc	caagaagact	gtttattgtg	aagcatttac	ctttcaaaaa	atcattacat	120
ttctatttct	tggaggagca	gcacattgtg	gagtggtgatt	cttaattctt	cattgagttt	180
gtcaatagga	cattgatgct	ggataggttg	tcttttgttt	ttatgcctca	gaccatcttg	240
tgagattggt	tgctatctc	ataatacagt	tttatgcaga	aagggtgaaa	ctatgtaaat	300
ggtttttatg	gaaattatca	gttacaatat	ttt			333

<210> 251

<211> 384

<212> DNA

<213> Homo sapien

<400> 251

aaaccatttg	tacaaaactt	ctataaat	ttctctctct	ttctctctta	tgtacaaaaa	60
tatcttaata	tatccccgaa	ctggtagga	tagatacaaa	tagatttttt	ataataaaaa	120
attcacaaaa	gattggaagc	attctataat	gaaaatggta	gaaaagacag	tgtgagggaa	180
gccatggggt	ttggggaatcg	ggccctggag	gagaagcaga	gtttcaaagg	gctgagaata	240
gcatagtttc	actgtaaacc	aatgtctaca	gcttattggg	gtgggggcta	ctgagacgaa	300
agacaccaac	tcgtttctag	agggctaaga	actgcacttt	aagaaagggc	ggggaggtga	360
agggacccca	gcaagaactt	tcag				384

<210> 252

<211> 211

<212> DNA

<213> Homo sapien

<400> 252

aaagcagtct	gaaaaatggga	catctgtaga	gaaattcatt	tccttcttct	cctccggatg	60
tggaaatggaa	gctttgaggg	aaggaaaagt	aggaaaagag	cgggatggga	tgggatggga	120
tgggatggga	tgggatagga	agagaggctg	gggaatgggc	agagaagggg	gtgctgagtg	180
tgctgtgaga	tagagcaaga	tcacaagaag	g			211

<210> 253

<211> 135

<212> DNA

<213> Homo sapien

<400> 253

aaaaattggt	tcttgacaag	ctgacttggc	acttaagtgc	acttttttat	gaagaaaaag	60
tacaatgaac	tgcttttcct	caagcaataa	ttgtttccaa	cttgtctggg	aattgtgtgt	120

ctggtaactg gaagg 135

<210> 254
 <211> 361
 <212> DNA
 <213> Homo sapien

<400> 254
 cctgtagccc ctgctacacg ggaggctgaa gtgggaggat cacttgaacc aatgaggggtg 60
 aggttacagt gagcccagat catgccacta ctctacaggc tgggtgataa gagtgagacc 120
 ctgtatcaaa aaaaagacaa ggaaaaaaaa aactgggccg tttgtttttg cagaatgtct 180
 ctcaatttgg actttttggg caggaatata atacaagtga tacaaatgct tctttaacat 240
 tagaacctgt ataaaattac cattacagac cttgctattt tacttatagg taaatcactg 300
 tttaccaagg taagtctttt gggaatttcc aaaaatgaag tccatggaca gttaaaaact 360
 g 361

<210> 255
 <211> 331
 <212> DNA
 <213> Homo sapien

<400> 255
 aaaaaataa ataatccacc aacgtgattg accttggcga gatcatgttt ctagtctata 60
 cctcagtttc cccatctgta aagtgaggat aatgtcccac cccatgtaac tgtggtgagg 120
 accaactgca acactgtgcc tgcgagtctc cttggaaaag tgtaaggttc tacacaaatg 180
 gaaagtgatc tgatcacact cagtgtcccc agcccagcct ttcagtgcc tggccctggg 240
 gtggggggaca atactctcct caccctcttc actagtcttc atgaatagca aggaggccat 300
 aacataattt ggtctaaacc ccttcctttt t 331

<210> 256
 <211> 186
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(186)
 <223> n = A,T,C or G

<400> 256
 cctttgggcc cttgcacttt gacctgcaat ggggccacac cagccttgct tgtgtccacc 60
 tggaaggact gagggagggtt ggcacgaacc atgcctgggc tcaggccggg cccanagcac 120
 ttgaccttgg acgcatctgt cacatcatgc acagggacct tgaaaggact gcctggcact 180
 tgatgg 186

<210> 257
 <211> 255
 <212> DNA
 <213> Homo sapien

<400> 257
 ctgggggtccg tcaccgacct ttgggggaact gggctacggg gaccacaagc ccaagtcttc 60
 cactgcagcc caggaggtta agactctgga tggcattttc tcagagcagg tcgccatggg 120
 ctactcacac tccttgggtga tagcaagaga tgaaagtga actgagaaag agaagatcaa 180
 gaaactgcca gaatacaacc cccgaaccct ctgatgctcc cagagactcc tccgactcca 240

cacctctcgc ggcag 255

<210> 258
 <211> 604
 <212> DNA
 <213> Homo sapien

<400> 258
 ctgaatttgc aatggagttt ggtggtgcaa tcggtattga ttagtttggc atagacagat 60
 gcagcagttt agagcaaaat cgagaaaatg attttttttt tcttccttga tttcctggca 120
 gaagatatct tacttttttca gcaaactttt cttttaacac taaagcagcc tagggcaatg 180
 ccagatactt agagctttttc tcttgattat aagtagaaat gggggtgtct gggctagagg 240
 tggagggtgg atgtgctgtc gtcacagtct agctggcagc aagcaaggca aaagcagaga 300
 ctgctctaga agcggttcca agcagcagag acgtcaggaa aggcacttct tagtaccaac 360
 ctctatgctt taatagttgc ttgttaagct gcttcattgg ttgagacaaa ctaccagcac 420
 ttcaaagagc tcagttctct gctcaactct cttctctagt tacattattt tttttccttc 480
 aggagactga ggcaggaaaa tcgcttgaac tcaggaggctc gaggccgcag tgagccaaga 540
 tcacaccacc gcaactccagc ctgggccttg caaagtgcta ggattacagg aatgagccac 600
 cagg 604

<210> 259
 <211> 429
 <212> DNA
 <213> Homo sapien

<400> 259
 aaaaatgtct gtatcgagat cttccagttt gaagtcttcc tcctctgtgt cttcccaagg 60
 ctctgtggca agctccactg gttctcccgc ttccatcaga accactgact tccacaatcc 120
 tggctatccc aagtacctgg gcacccccca cctggaactg tacttgagtg actcacttag 180
 aaacttgaac aaagagcggc aattccactt cgctggtatc aggtcccggc tcaaccacat 240
 gctggctatg ctgtcaagga gaacactctt tactgaaaac caccttggcc ttcattctgg 300
 caatttcagc agagtttaatt tgcttgctgt tagagatgta gcactttatc cttcctatca 360
 gtaactgtct cggtttcaga ctctcggttt cttccaggct tacagtggac atcatcagct 420
 tcctgcttt 429

<210> 260
 <211> 385
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(385)
 <223> n = A,T,C or G

<400> 260
 ctgcaacaca tgcagcacca gtctcagcct tctcctcggc agcactcccc tgtcgcctct 60
 cagataacat ccccatccc tgccatcggg agccccagc cagcctctca gcagcaccag 120
 tcgcaaatat agtctcagac acagactcaa gtattatcgc aggtcagtat tttctgaana 180
 cgcataatggc agacggattt gcgtatacca aggagagtgg cataggaggg aaaagcatat 240
 gtggctgaaa cctgtaagtt ggtgttggtt atgcagaaat gtgtaacaga tcaaacggtc 300
 ctctcaagtg tctattanat aggcaataag aactgcagtg tagctgagta acatctttta 360
 gctgactata aatcactttg ttttt 385

<210> 261

<211> 230
 <212> DNA
 <213> Homo sapien

<400> 261
 ctgtactgga tcctccagg tgggggacgac tctcacctga ctattacaat agcctcctaa 60
 gtgggtttccc tacttgcaac cttgcccgtg taatatctat cctccacaca gcaggcaggg 120
 cgatccttta agaatagaag ttagatcatg aaaatgctct gctctgatcc ctgcaaaagc 180
 tcgccacctc cttacagtca ccgctgaact cgtagcagag gttcaggagg 230

<210> 262
 <211> 198
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(198)
 <223> n = A,T,C or G

<400> 262
 atgttaagta aacatgaaat ctatataaca gaacaaaaat tcactcttat gtcaatgtca 60
 gcgtgttaat gtagatctat ttactganac agactctgta gtggcagaga gtggccttgt 120
 taagccagga ccctgttctg caggctgtgg gtagaagcta ggaagtcctt ggagtttcac 180
 ccagcttttc catgaatg 198

<210> 263
 <211> 157
 <212> DNA
 <213> Homo sapien

<400> 263
 aaaatatatt tctaaacaga atggggccgac tcagtcacag taactgttga tctccatagt 60
 agagcaaccc acaaagacag aactgatttt tttcccataa tcaggggtga aaaatataca 120
 acttgtttct gaaccaaacc cacaatttct gcagttt 157

<210> 264
 <211> 290
 <212> DNA
 <213> Homo sapien

<400> 264
 ctggctactc caagaccctg gcatgaggct gaggacaact tacaagggtc tcaccgaagc 60
 agtggacctt tattttgacc acctgatgtc cagggtggtg ccactccagt acaagcgtgg 120
 gggacctatc attgccgtgc aggtggagaa tgaatatggt tcctataata aagaccccg 180
 atacatgcc tacgtcaaga aggcactgga ggaccgtggc attgtggaac tgctcctgac 240
 ttcagacaac aaggatgggc tgagcaaggg gattgtccag ggagtcttgg 290

<210> 265
 <211> 234
 <212> DNA
 <213> Homo sapien

<400> 265
 aaaaaagga aaggaaagag aggaaaagaa aataaaataa gacgatttat tgcttctcct 60

cagcatcctc	cttgggtctcc	tccttcaccg	agagagcttc	tagcttttcc	gccacttttt	120
cggcatgata	atttttgctt	gataccttct	tttctctctc	ttcgatctct	ttcctgcatt	180
cttcaaactt	tgttttgaat	ttctgtgcat	tctcagcatt	caggaagcgg	atgg	234

<210> 266
 <211> 335
 <212> DNA
 <213> Homo sapien

<400> 266						
gtcctcatca	tcccagtttg	aggcagtgtc	ggagtgggga	aggccgtctt	agaccataga	60
ggttggaaga	cgctgagaga	tcataccagcc	cagccccctg	atgttacaga	gcagaagaca	120
gatgccccaa	caggagaagg	cacttgccca	cggctatacg	gcaggttgcc	acaaaaccaa	180
gatggcagcc	cttcctcagc	gtgcctcact	gccactccca	gagccagggg	gccccataaa	240
accacatca	tgtcttaaga	gtatatctgg	ctccttgacc	agcaatcggc	cctgggagcc	300
accaggtggg	aaaagcgcct	ctgccagagt	ccagg			335

<210> 267
 <211> 619
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(619)
 <223> n = A,T,C or G

<400> 267						
tggagctctg	acgaagggat	cggggaggtg	ctggagaagg	aagactgcat	gcaggccctg	60
agcggccana	tcttcatggg	catggngtcc	tcccagtacc	aggcccggct	ggacatcgng	120
cgcttcattg	atgggcttgt	caacgcctgc	atccgctttg	tctacttctc	tttggaggat	180
gagctcaaaa	gcaaggtggt	tgcanaaaaa	atgggcctgg	agacaggctg	gaactgccac	240
atctccctca	cacccaatgg	tgacatgcct	ggctccgaga	tccccccctc	cagccccagc	300
cacgcaggct	ccctgcatga	tgacctgaat	caggtgtccc	gagatgatgc	anaagggctc	360
ctcctcatgg	aggaggaggg	ccactcggac	ctcatcagct	tccagcctac	ggacagcgac	420
atccccagct	tcttggagga	ctccaaccgg	gccaagctgc	cccgggggat	ccaccaagtg	480
cggccccacc	tgacagaacat	tgacaacgtg	cccctgctag	tgcccccttt	caccgactgc	540
accccanaga	ccatgtgtga	gatgataaag	atcatgcaan	agtacgggga	ggtgacctgc	600
tgcttgggca	nctctgcca					619

<210> 268
 <211> 147
 <212> DNA
 <213> Homo sapien

<400> 268						
cctataaccc	agacaccagc	atggacaaaa	ctcagttata	ctgaattcag	agacaaaatt	60
cagtgcactt	cttctaccac	ttatttaggg	ttctacagca	tttactgag	cagacttagt	120
tttttgtttt	tgtttttaca	accttttt				147

<210> 269
 <211> 325
 <212> DNA
 <213> Homo sapien

<400> 269

ctgagctgta	ggaatgggtt	cttgggtacac	aagatagtat	tgttgagcta	gttttcgagc	60
tctgtgcaca	agcactctgt	aatcggggcc	catgccactg	tacaccaaac	ctatatgctt	120
ggtaattggt	tctactttgt	gtacacttcg	ctcatcatac	agaatggatt	tctgtttttt	180
ctcagttgct	aataccacac	catttgcagc	tttaattccc	acggacgggg	ctcctccagc	240
tacagcagcc	aaagcatatt	caatctggac	aagtttacca	gacgggctga	atgtagtcag	300
cgaaaagctg	tacccgcgct	ccgcc				325

<210> 270

<211> 428

<212> DNA

<213> Homo sapien

<400> 270

aaacatatgg	taaattaccg	agtgacacct	ctgggctaga	gacctctttt	gaggggagtt	60
tgcaaactac	ggattcaatt	tctttaacag	ttatgaagtt	ctttaaagaa	cctgtttggt	120
attggggggt	tgtggtcacc	tgtgcttttc	tgagatttgg	cccctacatc	taagttggtg	180
aatgcatgtg	tgtagagttg	tttatgggtg	ttccctttct	tcttagaagg	gtctatagta	240
atatccccctg	ccttatccct	agtagtacta	atttgtgttt	tcttacttct	tgacaggcaa	300
acacatcaga	gcataagtgg	ttcctaatgc	caagctgacc	tcccttgatc	tctgtcttct	360
acaggatatt	gacatgggac	ttctttatta	ccttttcagt	tcactgatac	cttcaaatag	420
ctttattt						428

<210> 271

<211> 206

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(206)

<223> n = A,T,C or G

<400> 271

cgtccccggag	cccacggngg	ncatggctgg	canagcgctc	tgcatgctgy	ggctggtcct	60
ggccttgctg	tctccagct	ctgctgagga	gtacgtgggc	ctgtctgcaa	accagtgngc	120
cgtgccagcc	aaggacaggg	tggactgcgg	ctacccccat	gtcaccccca	aggagtgcana	180
caaccggggc	tgctgctttg	actcca				206

<210> 272

<211> 83

<212> DNA

<213> Homo sapien

<400> 272

ctggcttccc	tgagaactca	acaatgcctt	ttcctgaggg	ccttcctcga	tcatccacaa	60
tgactacagc	cctctctacc	tgg				83

<210> 273

<211> 472

<212> DNA

<213> Homo sapien

<400> 273

ctggagaagg	tgtgcagggg	aaaccctgct	gatgtcaccg	aggccaggtt	gtctttctac	60
------------	------------	------------	------------	------------	------------	----

tcgggacact	cttccttttg	gatgtactgc	atgggtgttct	tggcgctgta	tgtgcaggca	120
cgactctgtt	ggaagtgggc	acggctgctg	cgaccacacag	tccagttctt	cctgggtggcc	180
tttgccctct	acgtgggcta	caccgcgtg	tctgattaca	aacaccactg	gagcgatgtc	240
cttggtggcc	tcctgcaggg	ggcactggtg	gctgccctca	ctgtctgcta	catctcagac	300
ttcttcaaag	cccgaccccc	acagcactgt	ctgaaggagg	aggagctgga	acggaagccc	360
agcctgtcac	tgacgttgac	cctgggcgag	gctgaccaca	accactatgg	ataccgcac	420
tcctcctcct	gaggccggac	cccgcccagg	caggagagctg	ctgtgagtcc	ag	472

<210> 274

<211> 205

<212> DNA

<213> Homo sapien

<400> 274

ccaggcggcc	cgaggactta	cggtcggcac	ttctctgttc	tcccgtgtca	gcgtgtggtg	60
tcgcctgcat	gggtcgtacc	tggatggtgt	gtccaccatc	gacacggagg	ggctggattt	120
gtttctcagg	caatcctgta	ttttaatttt	agatgtattt	cctgaagcat	atttttcata	180
gaatgtagcg	tgtaaatagc	ttttt				205

<210> 275

<211> 308

<212> DNA

<213> Homo sapien

<400> 275

ctcctcgccc	tccccaccga	catcatgctc	cagttccagc	ttggatttac	actgggcaac	60
gtggttgga	tgtatctggc	tcagaactat	gatataccaa	acctggctaa	aaaacttgaa	120
gaaattaa	aggacttgga	tgccaagaag	aaaccccta	gtgcatgaga	ctgcctccag	180
cactgccttc	aggatatact	gattctactg	ctcttgaggg	cctcgtttac	tatctgaacc	240
aaaagctttt	gttttcgtct	ccagcctcag	cacttctctt	ctttgctaga	ccctgtgttt	300
tttgcttt						308

<210> 276

<211> 201

<212> DNA

<213> Homo sapien

<400> 276

aaattaactt	tttcttgcaa	aatattcatt	tcattttttc	caagaaaatc	ttataaaggc	60
aaaaataaaa	ttttattttg	gcaaatgtca	tgaagtcgat	actggcagca	tatggagtta	120
gttaaaaata	gacaacaact	gctagatata	ttcaaaatc	tatttttttt	tctgagcata	180
gtcaaagaga	aatttttcatt	t				201

<210> 277

<211> 520

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(520)

<223> n = A,T,C or G

<400> 277

aaaaaaaaag	tattcagcac	catttgctca	tnngtctttc	agagtttggt	cttaaagttt	60
------------	------------	------------	------------	------------	------------	----

ctggaacttt	cctgtctgta	aagtaacagg	aattactgag	ctacattgga	aagcctctct	120
gggacaggca	gtggggagtt	aagcagtcac	cataaaggaa	tcagtgtaca	ttcagcatgg	180
tgacttgact	acacaacaat	cccttcccct	ctactgtagc	tcaagagaga	catgcttcta	240
accactgagg	tatgaggagt	ctcagactgt	tatttgctgt	tagaattggt	cttcccagct	300
aataacagta	catctctggc	acagatgcta	ttggtcctta	atgtcctgtg	atcttaggaa	360
atagtttgga	tttagttcaa	tttattcaga	aaccaaactg	gtttaattag	cttcactact	420
ctggcagagt	aagggtatgc	tggtttagta	tctttataaa	atatatataa	tgtataggta	480
aatcatagtc	ttaaatcata	cctaaaatac	tgtatcattt			520

<210> 278

<211> 264

<212> DNA

<213> Homo sapien

<400> 278

cgcgccgggc	ggaactttcc	agaacgctcg	gtgagaggcg	gaggagcggc	aactaccccg	60
gctgcgcaca	gctcggcgct	ccttcccgcct	ccctcacaca	ccggcctcag	cccgcaccgg	120
cagtagaaga	tggtgaaaga	aacaacttac	tacgatgttt	tgggggtcaa	acccaatgct	180
actcaggaag	aattgaaaaa	ggcttatagg	aaactggcct	tgaagtacca	tcctgataag	240
aacccaaatg	aaggagagaa	gttt				264

<210> 279

<211> 414

<212> DNA

<213> Homo sapien

<400> 279

aaacatacaa	taatttttat	tatggaaatt	aatctttaca	tacaaaatca	gctacgtaat	60
tttacttaca	aaacaataaa	aactgttctt	tactgtggca	acaaaagaag	cattttgaca	120
aatgaaaaaa	attaatgcaa	acaaattaaa	acaatgcttt	tctttttact	tgcttctactg	180
tctcttctat	ttattttcta	tgatcatttg	acacaaacat	ggattacttt	gatatctact	240
gaaacataaa	tgataagggt	cttaaagggt	gaattaaaag	tctgggtgtt	caatatttta	300
gaagctgaat	aaacaaaacg	aaattggggg	ttgtgattac	agaggattta	tcattttttc	360
cctttgtcca	tatgaaaata	tataatagaa	aattaccac	gggaaaacat	tttt	414

<210> 280

<211> 262

<212> DNA

<213> Homo sapien

<400> 280

ccaccatgcc	tggcctgctt	caattttttg	atgccacttt	gtaaacggca	cttaattatg	60
gaaaatagga	aaaagcaaaa	ctaaaataag	gaagaggata	tatatataac	ttttcacaat	120
ctcttttctg	atccccttta	gatgcccgat	caaccaggac	cacacacaga	tttcatttta	180
tttgtagagt	atatgaaaag	atttaatagt	ctcatgcatt	ttatttttacg	tatactgatt	240
tctacgtttt	gactgactat	tt				262

<210> 281

<211> 349

<212> DNA

<213> Homo sapien

<400> 281

ctgtgacccg	ggtgcatcag	tggatatagt	tgtgtctccc	catgggggtt	taacagtctc	60
tgcccaagac	cgttttctga	taatggctgc	agaaatggaa	cagtcactctg	gcacaggccc	120

agcagaatta	actcagtttt	ggaaagaagt	tcccagaaac	aaagtgatgg	aacataggtt	180
aagatgccat	actgttgaaa	gcagtaaacc	aaacactctt	acgttaaaaag	acaatgcttt	240
caatatgtca	gataaaacca	gtgaagatat	atgtctacaa	ctcagtcgtt	tactagaaaag	300
caataggaag	cttgaagacc	aagttcagcg	ttgtatctgg	ttccagcag		349

<210> 282

<211> 381

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(381)

<223> n = A,T,C or G

<400> 282

aaacactaaa	tgaagcttct	cacaatttct	aattataaac	aaaaggctga	aaacagtatg	60
ggaaacaaaag	tttcaaaaaca	aagaaaagtt	gagtaaaaag	tgccccctct	atggctcatc	120
tgaagaaaac	attttactca	gagaggcaaa	catttctgat	ctaggagtaa	gtttccact	180
cactttgcaa	ggaccctctc	attctgcana	aagacctaca	agtctttctg	gtctcaattg	240
caaagtacgt	gaaaatgtgt	atgaaagatc	taaaagctaa	atattagaat	aaggctaatt	300
gaaatcaaaa	ttgtgtgctg	gtctaaatat	acatcttcgg	cttcttcctt	tttagtaagt	360
atttttatatt	cagatgtatt	t				381

<210> 283

<211> 543

<212> DNA

<213> Homo sapien

<400> 283

aatatagctc	ctccctaccc	ccaacaatgg	accctgcca	ttgcctccca	gttccttgat	60
cttcctaggt	tccacaactc	tctttttcct	tttagtttta	ttccctccag	ccaaacctct	120
cttattcaat	attttgagcc	aatgggggag	ttatgtagat	ttttttccct	acacattagc	180
tggccccctt	tatgaccaat	gactcataag	gcaagatgtg	tgggtggcatc	ttcggacagg	240
cagcaggctt	taatagggca	gcctgggttg	gtggaggcaa	gcaaagctaa	ttggcatgcg	300
tgggaatcaa	accccaggcc	ctgggctcat	tagcccatgg	tcaaaacaac	tgagccagag	360
gaggtaataa	tttgcccaaag	aatatcagta	gttcctttat	tagaagaaaa	tggctgatat	420
ggaagttggg	gaatctgaat	tgccagagaa	tcttgggaag	agtaataaagc	tcttagtctc	480
aacaaaaagt	gttttttcat	ctcagcgcgt	aaagggtgct	atatgggaac	aaagaagtat	540
ttt						543

<210> 284

<211> 147

<212> DNA

<213> Homo sapien

<400> 284

aaactgggat	tttatctttg	attctccttc	agccctcacc	cctggttctc	atctttcttg	60
atcaacatct	ttctttgcct	ctgtcccctt	ctctcatctc	ttagctcccc	tccaacctgg	120
ggggcagtg	tgtggagaag	ccacagg				147

<210> 285

<211> 316

<212> DNA

<213> Homo sapien

<400> 285

cggccgaggt	ctggcttcac	tcctactccc	tctctgctcg	cagcacgtcg	gccgccagct	60
ctttgatgtg	ttcccaggcc	cgctgcacat	gggcagattc	caccgtgcga	gaacagatgg	120
caaagcgag	gacaaacttg	tccctgaggt	gacatggaac	caagtggatt	tttttggcac	180
tgtttattct	ttgcagaaga	gcttcattca	ctttgttggg	acccttttagc	cgaaagcaga	240
caagccccag	aatgacttcc	acacagattt	caaagcgggg	atcctggcgc	accagtgact	300
caaactcatg	ggacag					316

<210> 286

<211> 322

<212> DNA

<213> Homo sapien

<400> 286

cctggggagc	cctttagtgg	ggtgggacct	caggcagacc	cccaaacc	agggagccag	60
atgcccgaag	tcaagtcatt	agtgatatgt	ggcagggctg	acagagaaat	aatcctggag	120
gtctccaaag	ctgctgggaa	tggaatggcg	atgaaaagcg	caggagtggg	caggggtgtg	180
tgggtgatgg	tggcctcact	cagagtggac	caaggcccca	gctccttgcc	caaaaccaa	240
gcccttgggc	ccgaagtttt	tagcataaca	tcctttgcag	taaatctcgc	catccttgtc	300
tgccaggggtg	ggtgactcaa	gg				322

<210> 287

<211> 364

<212> DNA

<213> Homo sapien

<400> 287

ctgcccagcg	tcaaaccaat	tctggctgat	atcgagtacc	tgcaggacca	gcacctcctg	60
ctcacagtca	agtccatgga	tggctatgaa	tcctatgggg	agtgtgtggt	tgcactcaaa	120
tccatgatcg	gcagcacggc	ccaacagttc	ctgaccttcc	tatcccaccg	tggcgaggag	180
acaggcaata	tcagaggctc	catgaagggtg	cgggtgcca	cggagcgcc	gggcacccgt	240
gagcggctct	acgagtggat	cagcattgat	aaggatgagg	caggagcaaa	gagcaaagcc	300
ccctctgtgt	cccaggggag	ccaggagccc	aggtcaggga	gccgcaagcc	agccttcaca	360
gagg						364

<210> 288

<211> 261

<212> DNA

<213> Homo sapien

<400> 288

aaaattataa	ctactcattc	tttcttttagc	cttagttaat	ttgagcagaa	gccacaacaa	60
gcaaaccaca	ataaatTTtag	aattggcaga	aatccacatt	aactcctctt	cccaagtttc	120
cacactacta	ccatttacag	ttgtaggttt	gtaattgata	attatgtaat	gcagaaacta	180
gctttgactt	gtgtaacgat	gcactgtcaa	agtaagcaaa	gtaagaattg	aaattccaca	240
ttcccagaat	ttaacactca	g				261

<210> 289

<211> 261

<212> DNA

<213> Homo sapien

<400> 289

ctgagtgtta	aattctggga	atgtggaatt	tcaattctta	ctttgcttac	tttgacagtg	60
------------	------------	------------	------------	------------	------------	----

catcgttaca caagtcaaag ctagtttctg cattacataa ttatacatta caaacctaca	120
actgtaaatg gtagtagtgt ggaaacttgg gaagaggagt taatgtggat ttctgccaat	180
tctaaattta ttgtggtttg cttgtgttgg cttctgctca aattaactaa ggctaaagaa	240
agaatgagta gttataattt t	261

<210> 290
 <211> 92
 <212> DNA
 <213> Homo sapien

<400> 290	
ccactacccg aacttacagg tgccaaaaga agaaagggtg taaacggaga ccacctatca	60
ctcatcagaa cctaggatca tcacattcct tt	92

<210> 291
 <211> 287
 <212> DNA
 <213> Homo sapien

<400> 291	
ccatggctcc gctcagggcc ccggtcacct ccgagtcact ctgttccttg actgtctttg	60
tgtttctgta cctcaaggca ctgaagctgg aggactctgt ccatgcctgt gtcaccctcg	120
tgtgggagcc tctgggctcg gcaggtccac atttcatgag ctgaggcgtg ggccagggcc	180
atctggaaag ggaactcggc tttccagaa cgtggtggat catctgtcgg gtgtgtggtg	240
aacacgttca gttcatcagg gcctacgctc cggaagggg cccccag	287

<210> 292
 <211> 270
 <212> DNA
 <213> Homo sapien

<400> 292	
ccattgtttc ctgcgtggcg aaggctcctt gaacatccct caccttcttc tcccgcctct	60
gccttctgct gggtaaaagg tggccttttc tctccagcct tgaattgttc cctgttggtc	120
tcccaagggc ccatctgctg gtacagtcca cacttccaca gccaagacc gagagggtc	180
tactgcccc aagcctctct cctgtgacct tgggattctg tcttggcaga atcctttgtc	240
agcggctctt actctgtcct tcctgtttgg	270

<210> 293
 <211> 333
 <212> DNA
 <213> Homo sapien

<400> 293	
ccatgctcgt caacctgggtg tccactgctt gctacgtctc cttectcttc ctgggctgcg	60
acactggccc tgtggtggg gttactgttc cctatggaaa cagcacagca cctggctcag	120
ccctggaccc ctactgccc tgcaataata actgtgaatg ccaaaccgat tccttcactc	180
cagtgtgtgg ggcagatggc atcacctacc tgtctgcctg ctttgctggc tgcaacagca	240
cgaatctcac gggctgtgcg tgcctcacca ccgtccctgc tgagaacgca accgtgggtc	300
ctggaaaatg ccccgatcct ggggtccaag agg	333

<210> 294
 <211> 123
 <212> DNA
 <213> Homo sapien

<400> 294
 ctgatacaaa tacagaaaac tctgcccatt atccaagaaa caaataatta agactaaaat 60
 gcaagctgat gtgttcgagc attgtagggc cactaaatag ccatctgtga ttcgtggcaa 120
 ttt 123

<210> 295
 <211> 311
 <212> DNA
 <213> Homo sapien

<400> 295
 ctgcatacag acatttgttt aggtcatctg gattatcttg attgtcacca tggcaactat 60
 ccacaaccag tgcctagggtg tgtgagaaga gtgatacaat aatactgtgg catgggtcatt 120
 tagctaattcc agtctaagcc taacagaaac cttttccatc aaagtttttc agagaataac 180
 aacatctcat aagaggccag aggatggctt gtgcttaata tcacacctgt acagtagggc 240
 agtgcttccc aggtctgtctg cttacatttt agcttgtctt acggttacat atgggttttag 300
 tattttcatt t 311

<210> 296
 <211> 241
 <212> DNA
 <213> Homo sapien

<400> 296
 ctgcggaaga tctgcaacca cccctacatg ttccagcaca tgcaggagtc cttttccgag 60
 cacttgggggt tcactggcgg cattgtccaa gggctggacc tgtaccgagc ctccgggtaaa 120
 tttgagcttc ttgatagaat tcttcccaa ctcggagcaa ccaaccacaa agtgctgctg 180
 ttctgcaaaa tgacctccct catgaccatc atggaagatt actttgcgta tcgcggtttt 240
 a 241

<210> 297
 <211> 295
 <212> DNA
 <213> Homo sapien

<400> 297
 aaacacaaga tgaataact ctgttctgtc caaagcatca cctaattggtg tgaggcatct 60
 cacttagctg tggagaagtc cttggaatta gatctcagaa agacagcttt aagacagtaa 120
 aaccttttgg caatgggcta attgccttaa aagaagagtt ctacctgaaa gaccttgag 180
 gtggagaaat tgcctacaa agattcttgg atatgttagt ggagataact gacatgggta 240
 gctgtgggtc aaccaggaac tgtcaacaac ctgatctctg caaaaccagg atgga 295

<210> 298
 <211> 347
 <212> DNA
 <213> Homo sapien

<400> 298
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 accaacacct gctacccag agagcttttc taaaaaaagc aagaaagcag tcatgagtgg 120
 tattcaccct gcagaagaca cggaaggtag tgagttagg ccagagggac ttccagaagt 180
 tgtaaagaaa gggtttgctg acatcccagc aggaagagct agcccatata tcttgcaag 240
 aacaacctg gcaactcgga ccagcccccg cctggctgca cagaagttag cgctatcccc 300
 actgagctc ggcaaagaaa atcttgacaga gtcctccaaa ccaacag 347

<210> 299
 <211> 268
 <212> DNA
 <213> Homo sapien

<400> 299
 aaaaagtaaa catgaaaaca tcacgaattg taccatgatt caagaataac ttttgtaata 60
 gaaaacacat gaccttttgc agtatagtgt gataccgaag taaaagtgaa agaaataaat 120
 gcaggaaaagt ttaagtggat gtaagttttt ataaggaaaag taataagagg aggctgcttt 180
 tgaaggtcct ttgatcttcc atgatgataa tatcgttgca aagttcttta acttgatttc 240
 aagtaattag cagttgacca cttggttt 268

<210> 300
 <211> 185
 <212> DNA
 <213> Homo sapien

<400> 300
 aaattggaga aggaagtttt cctgaagagc cagaatcctt gctaagtcatt ttagatccaa 60
 ctgaccatct ttatttctgt caaaaatctt catcatgggt ccggtgtatt cttccagttt 120
 agcctcagaa atggcctttc tgtggtgaag aaagaggtct cggaggaagt tgcggagctc 180
 agcag 185

<210> 301
 <211> 75
 <212> DNA
 <213> Homo sapien

<400> 301
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 tttgaaattg gcttt 75

<210> 302
 <211> 247
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(247)
 <223> n = A,T,C or G

<400> 302
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 ttgtagcagc cacatcagaa agcagaagaa aacagtattt ctgaaggcat tgtttgaggt 120
 tgatctcagc actgaacgat ttcaagccct acgcaccana acagaaggag ggtggaggaa 180
 gtgatcanag ggaacgagct gtaggtttgc anaaatgtgt gaaacaaaaa tgatcactgc 240
 ctacttg 247

<210> 303
 <211> 535
 <212> DNA
 <213> Homo sapien

<400> 303

ctgcttcaga	ggaatcact	gaaaaataaa	gaaaaacat	ccatgcatgg	ctgcatccag	60
tgtacctgta	atcctgaaga	aaaggtccta	attccttcca	tgctgaaatg	ctagcttttg	120
tttcagagag	agactttatt	gcaactgtga	ccaccgtcac	tggtgagcac	tgctgttcgg	180
ccccagcg	acttaaaaga	ctggaatgtg	gtagtggcgg	tcgttctcgg	tcagcagggg	240
gatctccggc	cagtcctga	gaggctcctc	tgggtagcag	acttcaaagt	ctctggagtt	300
aaacttgaac	agtctgaaca	cttttatctt	tacttcaagg	gagtatccaa	gtataaacat	360
atcaatctgc	tctagtccac	atgtgtcgcc	tacagaattc	aggtgattca	tcatgaagct	420
caaaggatca	gaggatgtct	ccctggaaaa	caggagtcta	aaaagactgg	gaatgacctt	480
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<210> 304

<211> 522

<212> DNA

<213> Homo sapien

<400> 304

ccgcgctcgg	tctacaatca	cgttttatta	ttggctcgtc	tagtcatggg	atagagaagg	60
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tttagatctt	tatcctgggc	ctgtcaatga	tcaggtaatt	ggaaggatca	aaattaggcc	180
aaacttggtg	attgggcaa	aattgaacca	aagtttgtgt	caagaagacc	tggggcagag	240
atatgtgact	aaatcatttg	gaatatgccc	agacccaag	aatatttatg	cccaacttga	300
atgctaacca	gaagtccctt	actgtagaag	attgtaagg	tgctattttt	ttgccccgac	360
accaaataat	tgatgtattt	tccaacacca	attctccaat	tctctgacac	caactcgatg	420
ttcaacaatt	cagttatatt	ctgtcactaa	ttcctgcagc	tatcagcagg	ccccacaggt	480
aaaggattca	gtctcacaag	attgcccccc	caccacttc	ag		522

<210> 305

<211> 165

<212> DNA

<213> Homo sapien

<400> 305

cctaaagcgc	tcctcgctga	agctcaagg	gtccacaatg	atttgtttgt	caaagttatt	60
gagtgcata	gccagttctc	ctcctcctcc	accctgggtg	tgtaggcat	cgtctgaggc	120
agtgccctgg	gctgcattgg	aatgcctgt	gaccgcctgc	tgag		165

<210> 306

<211> 294

<212> DNA

<213> Homo sapien

<400> 306

ctgcacctaa	gacatggccc	tggctaggcg	ggaacagctc	acagtagcga	tacattcaca	60
ggacacagtt	ggtgtccaga	aaagggggct	cagaacacag	tttctacaca	agcacttggc	120
acccacacga	cagagacgtc	actcaagcag	cacagccaca	aatagtttac	agcagctcat	180
gcccggcatc	cgcccatgct	gggagactcc	ctgaaagggtg	ggcacctgcc	gtctatgagg	240
aggtgtctcc	ctccatcatt	aacccaaac	cacacaatgt	gtgaggagag	cagg	294

<210> 307

<211> 181

<212> DNA

<213> Homo sapien

<400> 307

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aaaaatccat gacaccttga tagaaattag agtttacaca aacaaaaaag gaaccttcga      60
tattgccagc agctataaag tgaacgtact gagaccgaca ggacagcaag aaggcatttg      120
cacatttata tctgacaccc gaccatactt tcagtcacca gaatatcttc tctccagatt      180
t                                                                                   181

```

```

<210> 308
<211> 179
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(179)
<223> n = A,T,C or G

```

```

<400> 308
aaggctgagg actgctggga gctcagatca gcccggagct actggctcat gggcagccaa      60
aaaatactgg atctgctgaa cgaaggctca gcccagatc tccgcagtct tcagcgcatt      120
ggcccgaaga aggccanct aatcgtgggc tggcgggagc tccacggccc cttcagcca      179

```

```

<210> 309
<211> 129
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(129)
<223> n = A,T,C or G

```

```

<400> 309
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catcaccttc ttcttctctc tcctcttctt cccaccttc ttctcttctt tcgtctacct      120
cattgtcag                                                                                   129

```

```

<210> 310
<211> 390
<212> DNA
<213> Homo sapien

```

```

<400> 310
tgaggctggg ggagagccgt ggtccctgag gatgggtcag agctaaaactc cttcctggcc      60
tgagagtcag ctctctgccc tgtgtacttc ccgggccagg gctgccccta atctctgtag      120
gaaccgtggg atgtctgcat gttgcccctt tctcttttcc cctttcctgt cccaccatac      180
gagcacctcc agcctgaaca gaagctctta ctctttctta tttcagtgtt acctgtgtgc      240
ttggtctgtt tgactttacg cccatctcag gacattccg tagactgttt aggttcccct      300
gtcaaataac agttaccac tcggtcccag ttttgttgcc ccagaaaggg atgttattat      360
ccttgggggc tcccagggca agggttaagg                                                                                   390

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<210> 311
<211> 355
<212> DNA
<213> Homo sapien

```

```

<220>

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<221> misc_feature
 <222> (1)...(355)
 <223> n = A,T,C or G

<400> 311

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gcataccgc	ctgttgagaa	atgccgtgtc	tagattgtgg	acaagagcct	gcgtgattat	120
gctatangga	naaaaattct	tcgagttcca	cccnanctcc	tctaaacatt	tggtcactc	180
aaaacaaaaa	gncaccaatc	ttantactgc	tgaacttcat	ttatgtnacc	taacattaac	240
cntcgtagga	aaaccaaata	gccctctcgt	ncangatatg	ttgctaaaagg	actacntgt	300
tcaacacaac	ggctccggtg	tgtgaactcc	tgtttgggtg	attcccctac	tctca	355

<210> 312
 <211> 498
 <212> DNA
 <213> Homo sapien

<400> 312

ccattctttt	gaatctaata	tattatcaat	agcatcctcc	ataatatctt	tgataaaaagg	60
tgtccaccga	gagagctgaa	aagtttcttc	tgcagaccga	tcctttctta	acggtttgcc	120
ttgttgagat	tggggaacaa	tgggaacacc	aaggtaactc	cagttacgaa	tcatgtcact	180
ctcattttct	atctttacat	tctggatcaa	cctgtccaaa	ttttcttccg	tagttccatt	240
aatactgaag	atataaagta	gaattgctct	tattttatca	caattatcat	gatttttgtt	300
gagtagaact	ggaaggagta	ctcgcagtgga	atctttcacc	ttctgtcctt	ctgcatcagt	360
tccaagtgcc	aggctctgtt	cagttttgca	gagcttttct	atattaagct	tgaacttatt	420
catgcaatct	tctgctaagt	taagatggac	aacttgctta	gtaatctgtt	ttcggaata	480
gggcatcttt	ttcatcag					498

<210> 313
 <211> 653
 <212> DNA
 <213> Homo sapien

<400> 313

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aaaaacaaaa	acaaaaacgc	atttaaggat	acacgaagca	gtgaaaacaa	agccccagta	120
ttttcgctaa	agtactggaa	atacctgttt	ctaaaaacag	ctttatatatt	gtccactgcc	180
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ggtaaacagt	gcccataatta	tttgagactg	gctctgctgc	cctccctaag	ccagtttaca	300
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gtcccaacta	ttcctcagaa	cgtcccaggt	ggagggagtg	gcctgtcgat	tttcaactcat	420
tccatggagc	tctgtgtaca	tgaaaattcc	tccaagtgtg	gcttttgtcg	aattcagaga	480
tacagcaagc	cacgcataaa	acatggagtg	tagagcactg	gtgtacctag	cttagaaaca	540
ccctcggtga	atgtgggtact	gtggctcgaa	aggaagcaag	ggacaggacc	caggagactg	600
ggcggccagg	ctctcgaggt	tccacacaca	cctgtgaagc	ccggccagca	cag	653

<210> 314
 <211> 513
 <212> DNA
 <213> Homo sapien

<400> 314

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ctcagtacta	tcttagcaca	gactaacttc	tcccactccg	tcagaggtgg	caggtggcgg	120
gtcggtgggg	agggcctttt	ctccccataa	atgcctgaac	tttaatttat	accatataag	180

aaatcagtga	aaggtaaaca	acaagggttaa	tgtaactcta	ttataaattt	tgcatttttt	240
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aatcttcaaa	gctcataaat	ttcaactttt	caaataagaa	atTTtaactt	caaataagaa	360
gtctaggact	ttatggctat	taattttact	atcaaaatat	ccaagggact	ccattcaatg	420
taatagttat	aattcttcta	aatatcattt	gaataattct	ttgtggacgc	tagactcaag	480
actatgctac	atccaaacag	tacatctata	acc			513

<210> 315

<211> 222

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(222)

<223> n = A,T,C or G

<400> 315

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caaaaataga	aaattttcta	gtccatccta	atctgaatgg	tgctgtttct	atattgggtca	120
ttgccttgca	aacaggagct	ccacaaaagc	caggaaagaga	gactgcctcc	ttggctgaaa	180
gagtcctttc	aggaagggtgg	actgcattgg	tttgatatgt	tt		222

<210> 316

<211> 1633

<212> DNA

<213> Homo sapiens

<400> 316

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agacgtccgc	ttatgccttc	tttgtgcaga	catgcagaga	agaacataag	aagaaaaacc	180
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aatgtttttg aagttaaata aacagtatta cattttttaga actcttctct actataacag 1560
tcaatttctg actcacagca gtgaacaaac cccactccg ttgtatttgg agactggcct 1620
ccctataaat gtg 1633

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<210> 317

<211> 4235

<212> DNA

<213> Homo sapiens

<400> 317

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<212> DNA

<213> Homo sapiens

<400> 318

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<210> 319

<211> 1814

<212> DNA

<213> Homo sapiens

<400> 319

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<210> 320

<211> 3132

<212> DNA

<213> Homo sapiens

<400> 320

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<211> 2280

<212> DNA

<213> Homo sapiens

<400> 321

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<211> 1398

<212> DNA

<213> Homo sapiens

<400> 322

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<211> 1316

<212> DNA

<213> Homo sapiens

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gaaatgacaa ttttttccac ttatctgatc agaacaatg tttattaagc atcagaaact 1260
ctgccaacac tgaggatgta aagatcaata aaacaaataa taatcataaa aaaaaa 1316

```

<210> 324

<211> 200

<212> PRT

<213> Homo sapiens

<400> 324

```

Met Ala Lys Gly Asp Pro Lys Lys Pro Lys Gly Lys Thr Ser Ala Tyr
          5                      10                      15

```

```

Ala Phe Phe Val Gln Thr Cys Arg Glu Glu His Lys Lys Lys Asn Pro
          20                      25                      30

```

```

Glu Val Pro Val Asn Phe Ala Glu Phe Ser Lys Lys Cys Ser Glu Arg
          35                      40                      45

```

```

Trp Lys Thr Val Ser Gly Lys Glu Lys Ser Lys Phe Asp Glu Met Ala
          50                      55                      60

```

```

Lys Ala Asp Lys Val Arg Tyr Asp Arg Glu Met Lys Asp Tyr Gly Pro
          65                      70                      75                      80

```

```

Ala Lys Gly Gly Lys Lys Lys Lys Asp Pro Asn Ala Pro Lys Arg Pro
          85                      90                      95

```

```

Pro Ser Gly Phe Phe Leu Phe Cys Ser Glu Phe Arg Pro Lys Ile Lys
          100                     105                     110

```

```

Ser Thr Asn Pro Gly Ile Ser Ile Gly Asp Val Ala Lys Lys Leu Gly
          115                     120                     125

```

```

Glu Met Trp Asn Asn Leu Asn Asp Ser Glu Lys Gln Pro Tyr Ile Thr
          130                     135                     140

```

```

Lys Ala Ala Lys Leu Lys Glu Lys Tyr Glu Lys Asp Val Ala Asp Tyr
          145                     150                     155                     160

```

```

Lys Ser Lys Gly Lys Phe Asp Gly Ala Lys Gly Pro Ala Lys Val Ala

```


	165		170		175
Arg Lys Lys Val Glu Glu Glu Asp Glu Glu Gln Glu Glu Glu Glu Glu	180	185	190		
Glu Glu Glu Glu Glu Glu Asp Glu	195	200			
<210> 325					
<211> 263					
<212> PRT					
<213> Homo sapiens					
<400> 325					
Met Phe Arg Asn Gln Tyr Asp Asn Asp Val Thr Val Trp Ser Pro Gln	5	10	15		
Gly Arg Ile His Gln Ile Glu Tyr Ala Met Glu Ala Val Lys Gln Gly	20	25	30		
Ser Ala Thr Val Gly Leu Lys Ser Lys Thr His Ala Val Leu Val Ala	35	40	45		
Leu Lys Arg Ala Gln Ser Glu Leu Ala Ala His Gln Lys Lys Ile Leu	50	55	60		
His Val Asp Asn His Ile Gly Ile Ser Ile Ala Gly Leu Thr Ala Asp	65	70	75	80	
Ala Arg Leu Leu Cys Asn Phe Met Arg Gln Glu Cys Leu Asp Ser Arg	85	90	95		
Phe Val Phe Asp Arg Pro Leu Pro Val Ser Arg Leu Val Ser Leu Ile	100	105	110		
Gly Ser Lys Thr Gln Ile Pro Thr Gln Arg Tyr Gly Arg Arg Pro Tyr	115	120	125		
Gly Val Gly Leu Leu Ile Ala Gly Tyr Asp Asp Met Gly Pro His Ile	130	135	140		
Phe Gln Thr Cys Pro Ser Ala Asn Tyr Phe Asp Cys Arg Ala Met Ser	145	150	155	160	
Ile Gly Ala Arg Ser Gln Ser Ala Arg Thr Tyr Leu Glu Arg His Met	165	170	175		
Ser Glu Phe Met Glu Cys Asn Leu Asn Glu Leu Val Lys His Gly Leu	180	185	190		
Arg Ala Leu Arg Glu Thr Leu Pro Ala Glu Gln Asp Leu Thr Thr Lys	195	200	205		
Asn Val Ser Ile Gly Ile Val Gly Lys Asp Leu Glu Phe Thr Ile Tyr					

210 215 220
 Asp Asp Asp Asp Val Ser Pro Phe Leu Glu Gly Leu Glu Glu Arg Pro
 225 230 235 240
 Gln Arg Lys Ala Gln Pro Ala Gln Pro Ala Asp Glu Pro Ala Glu Lys
 245 250 255
 Ala Asp Glu Pro Met Glu His
 260

<210> 326

<211> 539

<212> PRT

<213> Homo sapiens

<400> 326

Met Pro Glu Asn Val Ala Pro Arg Ser Gly Ala Thr Ala Gly Ala Ala
 5 10 15
 Gly Gly Arg Gly Lys Gly Ala Tyr Gln Asp Arg Asp Lys Pro Ala Gln
 20 25 30
 Ile Arg Phe Ser Asn Ile Ser Ala Ala Lys Ala Val Ala Asp Ala Ile
 35 40 45
 Arg Thr Ser Leu Gly Pro Lys Gly Met Asp Lys Met Ile Gln Asp Gly
 50 55 60
 Lys Gly Asp Val Thr Ile Thr Asn Asp Gly Ala Thr Ile Leu Lys Gln
 65 70 75 80
 Met Gln Val Leu His Pro Ala Ala Arg Met Leu Val Glu Leu Ser Lys
 85 90 95
 Ala Gln Asp Ile Glu Ala Gly Asp Gly Thr Thr Ser Val Val Ile Ile
 100 105 110
 Ala Gly Ser Leu Leu Asp Ser Cys Thr Lys Leu Leu Gln Lys Gly Ile
 115 120 125
 His Pro Thr Ile Ile Ser Glu Ser Phe Gln Lys Ala Leu Glu Lys Gly
 130 135 140
 Ile Glu Ile Leu Thr Asp Met Ser Arg Pro Val Glu Leu Ser Asp Arg
 145 150 155 160
 Glu Thr Leu Leu Asn Ser Ala Thr Thr Ser Leu Asn Ser Lys Val Val
 165 170 175
 Ser Gln Tyr Ser Ser Leu Leu Ser Pro Met Ser Val Asn Ala Val Met
 180 185 190
 Lys Val Ile Asp Pro Ala Thr Ala Thr Ser Val Asp Leu Arg Asp Ile

195					200					205					
Lys	Ile	Val	Lys	Lys	Leu	Gly	Gly	Thr	Ile	Asp	Asp	Cys	Glu	Leu	Val
210					215					220					
Glu	Gly	Leu	Val	Leu	Thr	Gln	Lys	Val	Ser	Asn	Ser	Gly	Ile	Thr	Arg
225					230					235					240
Val	Glu	Lys	Ala	Lys	Ile	Gly	Leu	Ile	Gln	Phe	Cys	Leu	Ser	Ala	Pro
245					250					255					
Lys	Thr	Asp	Met	Asp	Asn	Gln	Ile	Val	Val	Ser	Asp	Tyr	Ala	Gln	Met
260					265					270					
Asp	Arg	Val	Leu	Arg	Glu	Glu	Arg	Ala	Tyr	Ile	Leu	Asn	Leu	Val	Lys
275					280					285					
Gln	Ile	Lys	Lys	Thr	Gly	Cys	Asn	Val	Leu	Leu	Ile	Gln	Lys	Ser	Ile
290					295					300					
Leu	Arg	Asp	Ala	Leu	Ser	Asp	Leu	Ala	Leu	His	Phe	Leu	Asn	Lys	Met
305					310					315					320
Lys	Ile	Met	Val	Ile	Lys	Asp	Ile	Glu	Arg	Glu	Asp	Ile	Glu	Phe	Ile
325					330					335					
Cys	Lys	Thr	Ile	Gly	Thr	Lys	Pro	Val	Ala	His	Ile	Asp	Gln	Phe	Thr
340					345					350					
Ala	Asp	Met	Leu	Gly	Ser	Ala	Glu	Leu	Ala	Glu	Glu	Val	Asn	Leu	Asn
355					360					365					
Gly	Ser	Gly	Lys	Leu	Leu	Lys	Ile	Thr	Gly	Cys	Ala	Ser	Pro	Gly	Lys
370					375					380					
Thr	Val	Thr	Ile	Val	Val	Arg	Gly	Ser	Asn	Lys	Leu	Val	Ile	Glu	Glu
385					390					395					400
Ala	Glu	Arg	Ser	Ile	His	Asp	Ala	Leu	Cys	Val	Ile	Arg	Cys	Leu	Val
405					410					415					
Lys	Lys	Arg	Ala	Leu	Ile	Ala	Gly	Gly	Gly	Ala	Pro	Glu	Ile	Glu	Leu
420					425					430					
Ala	Leu	Arg	Leu	Thr	Glu	Tyr	Ser	Arg	Thr	Leu	Ser	Gly	Met	Glu	Ser
435					440					445					
Tyr	Cys	Val	Arg	Ala	Phe	Ala	Asp	Ala	Met	Glu	Val	Ile	Pro	Ser	Thr
450					455					460					
Leu	Ala	Glu	Asn	Ala	Gly	Leu	Asn	Pro	Ile	Ser	Thr	Val	Thr	Glu	Leu
465					470					475					480
Arg	Asn	Arg	His	Ala	Gln	Gly	Glu	Lys	Thr	Ala	Gly	Ile	Asn	Val	Arg
485					490					495					

100

Lys Gly Gly Ile Ser Asn Ile Leu Glu Glu Leu Val Val Gln Pro Leu
500 505 510

Leu Val Ser Val Ser Ala Leu Thr Leu Ala Thr Glu Thr Val Arg Ser
515 520 525

Ile Leu Lys Ile Asp Asp Val Val Asn Thr Arg
530 535

<210> 327

<211> 144

<212> PRT

<213> Homo sapiens

<400> 327

Met Ala Phe Thr Phe Ala Ala Phe Cys Tyr Met Leu Ala Leu Leu Leu
5 10 15

Thr Ala Ala Leu Ile Phe Phe Ala Ile Trp His Ile Ile Ala Phe Asp
20 25 30

Glu Leu Lys Thr Asp Tyr Lys Asn Pro Ile Asp Gln Cys Asn Thr Leu
35 40 45

Asn Pro Leu Val Leu Pro Glu Tyr Leu Ile His Ala Phe Phe Cys Val
50 55 60

Met Phe Leu Cys Ala Ala Glu Trp Leu Thr Leu Gly Leu Asn Met Pro
65 70 75 80

Leu Leu Ala Tyr His Ile Trp Arg Tyr Met Ser Arg Pro Val Met Ser
85 90 95

Gly Pro Gly Leu Tyr Asp Pro Thr Thr Ile Met Asn Ala Asp Ile Leu
100 105 110

Ala Tyr Cys Gln Lys Glu Gly Trp Cys Lys Leu Ala Phe Tyr Leu Leu
115 120 125

Ala Phe Phe Tyr Tyr Leu Tyr Gly Met Ile Tyr Val Leu Val Ser Ser
130 135 140

<210> 328

<211> 138

<212> PRT

<213> Homo sapiens

<400> 328

Met Pro Asn Phe Ser Gly Asn Trp Lys Ile Ile Arg Ser Glu Asn Phe
5 10 15

Glu Glu Leu Leu Lys Val Leu Gly Val Asn Val Met Leu Arg Lys Ile

101

20 25 30
 Ala Val Ala Ala Ala Ser Lys Pro Ala Val Glu Ile Lys Gln Glu Gly
 35 40 45
 Asp Thr Phe Tyr Ile Lys Thr Ser Thr Thr Val Arg Thr Thr Glu Ile
 50 55 60
 Asn Phe Lys Val Gly Glu Glu Phe Glu Glu Gln Thr Val Asp Gly Arg
 65 70 75 80
 Pro Cys Lys Ser Leu Val Lys Trp Glu Ser Glu Asn Lys Met Val Cys
 85 90 95
 Glu Gln Lys Leu Leu Lys Gly Glu Gly Pro Lys Thr Ser Trp Thr Arg
 100 105 110
 Glu Leu Thr Asn Asp Gly Glu Leu Ile Leu Thr Met Thr Ala Asp Asp
 115 120 125
 Val Val Cys Thr Arg Val Tyr Val Arg Glu
 130 135

<210> 329

<211> 346

<212> PRT

<213> Homo sapiens

<400> 329

Met Phe Leu Ser Ile Leu Val Ala Leu Cys Leu Trp Leu His Leu Ala
 5 10 15
 Leu Gly Val Arg Gly Ala Pro Cys Glu Ala Val Arg Ile Pro Met Cys
 20 25 30
 Arg His Met Pro Trp Asn Ile Thr Arg Met Pro Asn His Leu His His
 35 40 45
 Ser Thr Gln Glu Asn Ala Ile Leu Ala Ile Glu Gln Tyr Glu Glu Leu
 50 55 60
 Val Asp Val Asn Cys Ser Ala Val Leu Arg Phe Phe Phe Cys Ala Met
 65 70 75 80
 Tyr Ala Pro Ile Cys Thr Leu Glu Phe Leu His Asp Pro Ile Lys Pro
 85 90 95
 Cys Lys Ser Val Cys Gln Arg Ala Arg Asp Asp Cys Glu Pro Leu Met
 100 105 110
 Lys Met Tyr Asn His Ser Trp Pro Glu Ser Leu Ala Cys Asp Glu Leu
 115 120 125
 Pro Val Tyr Asp Arg Gly Val Cys Ile Ser Pro Glu Ala Ile Val Thr

102

130		135		140
Asp Leu Pro Glu Asp Val Lys Trp Ile Asp Ile Thr Pro Asp Met Met				
145		150		155 160
Val Gln Glu Arg Pro Leu Asp Val Asp Cys Lys Arg Leu Ser Pro Asp				
	165		170	175
Arg Cys Lys Cys Lys Lys Val Lys Pro Thr Leu Ala Thr Tyr Leu Ser				
	180		185	190
Lys Asn Tyr Ser Tyr Val Ile His Ala Lys Ile Lys Ala Val Gln Arg				
	195		200	205
Ser Gly Cys Asn Glu Val Thr Thr Val Val Asp Val Lys Glu Ile Phe				
	210		215	220
Lys Ser Ser Ser Pro Ile Pro Arg Thr Gln Val Pro Leu Ile Thr Asn				
	225		230	235 240
Ser Ser Cys Gln Cys Pro His Ile Leu Pro His Gln Asp Val Leu Ile				
	245		250	255
Met Cys Tyr Glu Trp Arg Ser Arg Met Met Leu Leu Glu Asn Cys Leu				
	260		265	270
Val Glu Lys Trp Arg Asp Gln Leu Ser Lys Arg Ser Ile Gln Trp Glu				
	275		280	285
Glu Arg Leu Gln Glu Gln Arg Arg Thr Val Gln Asp Lys Lys Lys Thr				
	290		295	300
Ala Gly Arg Thr Ser Arg Ser Asn Pro Pro Lys Pro Lys Gly Lys Pro				
	305		310	315 320
Pro Ala Pro Lys Pro Ala Ser Pro Lys Lys Asn Ile Lys Thr Arg Ser				
	325		330	335
Ala Gln Lys Arg Thr Asn Pro Lys Arg Val				
	340		345	

<210> 330

<211> 826

<212> PRT

<213> Homo sapiens

<400> 330

Met Glu Gly Ala Gly Gly Ala Asn Asp Lys Lys Lys Ile Ser Ser Glu
5 10 15

Arg Arg Lys Glu Lys Ser Arg Asp Ala Ala Arg Ser Arg Arg Ser Lys
20 25 30

Glu Ser Glu Val Phe Tyr Glu Leu Ala His Gln Leu Pro Leu Pro His

35					40					45									
Asn	Val	Ser	Ser	His	Leu	Asp	Lys	Ala	Ser	Val	Met	Arg	Leu	Thr	Ile				
50					55					60									
Ser	Tyr	Leu	Arg	Val	Arg	Lys	Leu	Leu	Asp	Ala	Gly	Asp	Leu	Asp	Ile				
65					70					75					80				
Glu	Asp	Asp	Met	Lys	Ala	Gln	Met	Asn	Cys	Phe	Tyr	Leu	Lys	Ala	Leu				
					85					90					95				
Asp	Gly	Phe	Val	Met	Val	Leu	Thr	Asp	Asp	Gly	Asp	Met	Ile	Tyr	Ile				
100					105					110									
Ser	Asp	Asn	Val	Asn	Lys	Tyr	Met	Gly	Leu	Thr	Gln	Phe	Glu	Leu	Thr				
115					120					125									
Gly	His	Ser	Val	Phe	Asp	Phe	Thr	His	Pro	Cys	Asp	His	Glu	Glu	Met				
130					135					140									
Arg	Glu	Met	Leu	Thr	His	Arg	Asn	Gly	Leu	Val	Lys	Lys	Gly	Lys	Glu				
145					150					155					160				
Gln	Asn	Thr	Gln	Arg	Ser	Phe	Phe	Leu	Arg	Met	Lys	Cys	Thr	Leu	Thr				
165					170					175									
Ser	Arg	Gly	Arg	Thr	Met	Asn	Ile	Lys	Ser	Ala	Thr	Trp	Lys	Val	Leu				
180					185					190									
His	Cys	Thr	Gly	His	Ile	His	Val	Tyr	Asp	Thr	Asn	Ser	Asn	Gln	Pro				
195					200					205									
Gln	Cys	Gly	Tyr	Lys	Lys	Pro	Pro	Met	Thr	Cys	Leu	Val	Leu	Ile	Cys				
210					215					220									
Glu	Pro	Ile	Pro	His	Pro	Ser	Asn	Ile	Glu	Ile	Pro	Leu	Asp	Ser	Lys				
225					230					235					240				
Thr	Phe	Leu	Ser	Arg	His	Ser	Leu	Asp	Met	Lys	Phe	Ser	Tyr	Cys	Asp				
245					250					255									
Glu	Arg	Ile	Thr	Glu	Leu	Met	Gly	Tyr	Glu	Pro	Glu	Glu	Leu	Leu	Gly				
260					265					270									
Arg	Ser	Ile	Tyr	Glu	Tyr	Tyr	His	Ala	Leu	Asp	Ser	Asp	His	Leu	Thr				
275					280					285									
Lys	Thr	His	His	Asp	Met	Phe	Thr	Lys	Gly	Gln	Val	Thr	Thr	Gly	Gln				
290					295					300									
Tyr	Arg	Met	Leu	Ala	Lys	Arg	Gly	Gly	Tyr	Val	Trp	Val	Glu	Thr	Gln				
305					310					315					320				
Ala	Thr	Val	Ile	Tyr	Asn	Thr	Lys	Asn	Ser	Gln	Pro	Gln	Cys	Ile	Val				
325					330					335									

Cys Val Asn Tyr Val Val S r Gly Ile Ile Gln His Asp Leu Ile Phe
 340 345 350
 Ser Leu Gln Gln Thr Glu Cys Val Leu Lys Pro Val Glu Ser Ser Asp
 355 360 365
 Met Lys Met Thr Gln Leu Phe Thr Lys Val Glu Ser Glu Asp Thr Ser
 370 375 380
 Ser Leu Phe Asp Lys Leu Lys Lys Glu Pro Asp Ala Leu Thr Leu Leu
 385 390 395 400
 Ala Pro Ala Ala Gly Asp Thr Ile Ile Ser Leu Asp Phe Gly Ser Asn
 405 410 415
 Asp Thr Glu Thr Asp Asp Gln Gln Leu Glu Glu Val Pro Leu Tyr Asn
 420 425 430
 Asp Val Met Leu Pro Ser Pro Asn Glu Lys Leu Gln Asn Ile Asn Leu
 435 440 445
 Ala Met Ser Pro Leu Pro Thr Ala Glu Thr Pro Lys Pro Leu Arg Ser
 450 455 460
 Ser Ala Asp Pro Ala Leu Asn Gln Glu Val Ala Leu Lys Leu Glu Pro
 465 470 475 480
 Asn Pro Glu Ser Leu Glu Leu Ser Phe Thr Met Pro Gln Ile Gln Asp
 485 490 495
 Gln Thr Pro Ser Pro Ser Asp Gly Ser Thr Arg Gln Ser Ser Pro Glu
 500 505 510
 Pro Asn Ser Pro Ser Glu Tyr Cys Phe Tyr Val Asp Ser Asp Met Val
 515 520 525
 Asn Glu Phe Lys Leu Glu Leu Val Glu Lys Leu Phe Ala Glu Asp Thr
 530 535 540
 Glu Ala Lys Asn Pro Phe Ser Thr Gln Asp Thr Asp Leu Asp Leu Glu
 545 550 555 560
 Met Leu Ala Pro Tyr Ile Pro Met Asp Asp Asp Phe Gln Leu Arg Ser
 565 570 575
 Phe Asp Gln Leu Ser Pro Leu Glu Ser Ser Ser Ala Ser Pro Glu Ser
 580 585 590
 Ala Ser Pro Gln Ser Thr Val Thr Val Phe Gln Gln Thr Gln Ile Gln
 595 600 605
 Glu Pro Thr Ala Asn Ala Thr Thr Thr Thr Ala Thr Thr Asp Glu Leu
 610 615 620

Lys Thr Val Thr Lys Asp Arg Met Glu Asp Ile Lys Ile Leu Ile Ala
625 630 635 640

Ser Pro Ser Pro Thr His Ile His Lys Glu Thr Thr Ser Ala Thr Ser
645 650 655

Ser Pro Tyr Arg Asp Thr Gln Ser Arg Thr Ala Ser Pro Asn Arg Ala
660 665 670

Gly Lys Gly Val Ile Glu Gln Thr Glu Lys Ser His Pro Arg Ser Pro
675 680 685

Asn Val Leu Ser Val Ala Leu Ser Gln Arg Thr Thr Val Pro Glu Glu
690 695 700

Glu Leu Asn Pro Lys Ile Leu Ala Leu Gln Asn Ala Gln Arg Lys Arg
705 710 715 720

Lys Met Glu His Asp Gly Ser Leu Phe Gln Ala Val Gly Ile Gly Thr
725 730 735

Leu Leu Gln Gln Pro Asp Asp His Ala Ala Thr Thr Ser Leu Ser Trp
740 745 750

Lys Arg Val Lys Gly Cys Lys Ser Ser Glu Gln Asn Gly Met Glu Gln
755 760 765

Lys Thr Ile Ile Leu Ile Pro Ser Asp Leu Ala Cys Arg Leu Leu Gly
770 775 780

Gln Ser Met Asp Glu Ser Gly Leu Pro Gln Leu Thr Ser Tyr Asp Cys
785 790 795 800

Glu Val Asn Ala Pro Ile Gln Gly Ser Arg Asn Leu Leu Gln Gly Glu
805 810 815

Glu Leu Leu Arg Ala Leu Asp Gln Val Asn
820 825

<210> 331

<211> 92

<212> PRT

<213> Homo sapiens

<400> 331

Met Ala Tyr Arg Gly Gln Gly Gln Lys Val Gln Lys Val Met Val Gln
5 10 15

Pro Ile Asn Leu Ile Phe Arg Tyr Leu Gln Asn Arg Ser Arg Ile Gln
20 25 30

Val Trp Leu Tyr Glu Gln Val Asn Met Arg Ile Glu Gly Cys Ile Ile
35 40 45

106

Gly Phe Asp Glu Tyr Met Asn Leu Val Leu Asp Asp Ala Glu Glu Ile
 50 55 60

His Ser Lys Thr Lys Ser Arg Lys Gln Leu Gly Arg Ile Met Leu Lys
 65 70 75 80

Gly Asp Asn Ile Thr Leu Leu Gln Ser Val Ser Asn
 85 90

<210> 332

<211> 235

<212> PRT

<213> Homo sapiens

<400> 332

Met Asp Pro Ala Arg Pro Leu Gly Leu Ser Ile Leu Leu Leu Phe Leu
 5 10 15

Thr Glu Ala Ala Leu Gly Asp Ala Ala Gln Glu Pro Thr Gly Asn Asn
 20 25 30

Ala Glu Ile Cys Leu Leu Pro Leu Asp Tyr Gly Pro Cys Arg Ala Leu
 35 40 45

Leu Leu Arg Tyr Tyr Tyr Asp Arg Tyr Thr Gln Ser Cys Arg Gln Phe
 50 55 60

Leu Tyr Gly Gly Cys Glu Gly Asn Ala Asn Asn Phe Tyr Thr Trp Glu
 65 70 75 80

Ala Cys Asp Asp Ala Cys Trp Arg Ile Glu Lys Val Pro Lys Val Cys
 85 90 95

Arg Leu Gln Val Ser Val Asp Asp Gln Cys Glu Gly Ser Thr Glu Lys
 100 105 110

Tyr Phe Phe Asn Leu Ser Ser Met Thr Cys Glu Lys Phe Phe Ser Gly
 115 120 125

Gly Cys His Arg Asn Arg Ile Glu Asn Arg Phe Pro Asp Glu Ala Thr
 130 135 140

Cys Met Gly Phe Cys Ala Pro Lys Lys Ile Pro Ser Phe Cys Tyr Ser
 145 150 155 160

Pro Lys Asp Glu Gly Leu Cys Ser Ala Asn Val Thr Arg Tyr Tyr Phe
 165 170 175

Asn Pro Arg Tyr Arg Thr Cys Asp Ala Phe Thr Tyr Thr Gly Cys Gly
 180 185 190

Gly Asn Asp Asn Asn Phe Val Ser Arg Glu Asp Cys Lys Arg Ala Cys
 195 200 205

Ala Lys Ala Leu Lys Lys Lys Lys Lys Met Pro Lys Leu Arg Phe Ala

[illegible]

```
<210> 334
<211> 582
<212> PRT
<213> Homo sapiens
```

<400> 334																
Glu	Ser	Lys	Gly	Ala	Ser	Ser	Cys	Arg	Leu	Leu	Phe	Cys	Leu	Leu	Ile	
				5					10						15	
Ser	Ala	Thr	Val	Phe	Arg	Pro	Gly	Leu	Gly	Trp	Tyr	Thr	Val	Asn	Ser	
			20					25					30			
Ala	Tyr	Gly	Asp	Thr	Ile	Ile	Ile	Pro	Cys	Arg	Leu	Asp	Val	Pro	Gln	
		35					40					45				
Asn	Leu	Met	Phe	Gly	Lys	Trp	Lys	Tyr	Glu	Lys	Pro	Asp	Gly	Ser	Pro	
	50					55					60					
Val	Phe	Ile	Ala	Phe	Arg	Ser	Ser	Thr	Lys	Lys	Ser	Val	Gln	Tyr	Asp	
65					70					75					80	
Asp	Val	Pro	Glu	Tyr	Lys	Asp	Arg	Leu	Asn	Leu	Ser	Glu	Asn	Tyr	Thr	
				85					90					95		
Leu	Ser	Ile	Ser	Asn	Ala	Arg	Ile	Ser	Asp	Glu	Lys	Arg	Phe	Val	Cys	
			100					105					110			
Met	Leu	Val	Thr	Glu	Asp	Asn	Val	Phe	Glu	Ala	Pro	Thr	Ile	Val	Lys	
		115					120					125				
Val	Phe	Lys	Gln	Pro	Ser	Lys	Pro	Glu	Ile	Val	Ser	Lys	Ala	Leu	Phe	
	130					135					140					
Leu	Glu	Thr	Glu	Gln	Leu	Lys	Lys	Leu	Gly	Asp	Cys	Ile	Ser	Glu	Asp	
145					150					155					160	
Ser	Tyr	Pro	Asp	Gly	Asn	Ile	Thr	Trp	Tyr	Arg	Asn	Gly	Lys	Val	Leu	
				165					170					175		
His	Pro	Leu	Glu	Gly	Ala	Val	Val	Ile	Ile	Phe	Lys	Lys	Glu	Met	Asp	

180					185					190					
Pro	Val	Thr	Gln	Leu	Tyr	Thr	Met	Thr	Ser	Thr	Leu	Glu	Tyr	Lys	Thr
	195						200					205			
Thr	Lys	Ala	Asp	Ile	Gln	Met	Pro	Phe	Thr	Cys	Ser	Val	Thr	Tyr	Tyr
	210					215					220				
Gly	Pro	Ser	Gly	Gln	Lys	Thr	Ile	His	Ser	Glu	Gln	Ala	Val	Phe	Asp
225					230					235					240
Ile	Tyr	Tyr	Pro	Thr	Glu	Gln	Val	Thr	Ile	Gln	Val	Leu	Pro	Pro	Lys
				245					250					255	
Asn	Ala	Ile	Lys	Glu	Gly	Asp	Asn	Ile	Thr	Leu	Lys	Cys	Leu	Gly	Asn
			260					265					270		
Gly	Asn	Pro	Pro	Pro	Glu	Glu	Phe	Leu	Phe	Tyr	Leu	Pro	Gly	Gln	Pro
	275						280					285			
Glu	Gly	Ile	Arg	Ser	Ser	Asn	Thr	Tyr	Thr	Leu	Thr	Asp	Val	Arg	Arg
	290					295					300				
Asn	Ala	Thr	Gly	Asp	Tyr	Lys	Cys	Ser	Leu	Ile	Asp	Lys	Lys	Ser	Met
305				310							315				320
Ile	Ala	Ser	Thr	Ala	Ile	Thr	Val	His	Tyr	Leu	Asp	Leu	Ser	Leu	Asn
				325					330					335	
Pro	Ser	Gly	Glu	Val	Thr	Arg	Gln	Ile	Gly	Asp	Ala	Leu	Pro	Val	Ser
			340				345						350		
Cys	Thr	Ile	Ser	Ala	Ser	Arg	Asn	Ala	Thr	Val	Val	Trp	Met	Lys	Asp
	355						360					365			
Asn	Ile	Arg	Leu	Arg	Ser	Ser	Pro	Ser	Phe	Ser	Ser	Leu	His	Tyr	Gln
	370					375					380				
Asp	Ala	Gly	Asn	Tyr	Val	Cys	Glu	Thr	Ala	Leu	Gln	Glu	Val	Glu	Gly
385				390							395				400
Leu	Lys	Lys	Arg	Glu	Ser	Leu	Thr	Leu	Ile	Val	Glu	Gly	Lys	Pro	Gln
			405						410					415	
Ile	Lys	Met	Thr	Lys	Lys	Thr	Asp	Pro	Ser	Gly	Leu	Ser	Lys	Thr	Ile
		420					425						430		
Ile	Cys	His	Val	Glu	Gly	Phe	Pro	Lys	Pro	Ala	Ile	Gln	Trp	Thr	Ile
		435				440						445			
Thr	Gly	Ser	Gly	Ser	Val	Ile	Asn	Gln	Thr	Glu	Glu	Ser	Pro	Tyr	Ile
	450					455					460				
Asn	Gly	Arg	Tyr	Tyr	Ser	Lys	Ile	Ile	Ile	Ser	Pro	Glu	Glu	Asn	Val
465				470							475				480

Thr Leu Thr Cys Thr Ala Glu Asn Gln Leu Glu Arg Thr Val Asn Ser
485 490 495

Leu Asn Val Ser Ala Ile Ser Ile Pro Glu His Asp Glu Ala Asp Glu
500 505 510

Ile Ser Asp Glu Asn Arg Glu Lys Val Asn Asp Gln Ala Lys Leu Ile
515 520 525

Val Gly Ile Val Val Gly Leu Leu Leu Ala Ala Leu Val Ala Gly Val
530 535 540

Val Tyr Trp Leu Tyr Met Lys Lys Ser Lys Thr Ala Ser Lys His Val
545 550 555 560

Asn Lys Asp Leu Gly Asn Met Glu Glu Asn Lys Lys Leu Glu Glu Asn
565 570 575

Asn His Lys Thr Glu Ala
580

<210> 335

<211> 709

<212> PRT

<213> Homo sapiens

<400> 335

Met Ala Glu Val Glu Asp Gln Ala Ala Arg Asp Met Lys Arg Leu Glu
5 10 15

Glu Lys Asp Lys Glu Arg Lys Asn Val Lys Gly Ile Arg Asp Asp Ile
20 25 30

Glu Glu Glu Asp Asp Gln Glu Ala Tyr Phe Arg Tyr Met Ala Glu Asn
35 40 45

Pro Thr Ala Gly Val Val Gln Glu Glu Glu Glu Asp Asn Leu Glu Tyr
50 55 60

Asp Ser Asp Gly Asn Pro Ile Ala Pro Thr Lys Lys Ile Ile Asp Pro
65 70 75 80

Leu Pro Pro Ile Asp His Ser Glu Ile Asp Tyr Pro Pro Phe Glu Lys
85 90 95

Asn Phe Tyr Asn Glu His Glu Glu Ile Thr Asn Leu Thr Pro Gln Gln
100 105 110

Leu Ile Asp Leu Arg His Lys Leu Asn Leu Arg Val Ser Gly Ala Ala
115 120 125

Pro Pro Arg Pro Gly Ser Ser Phe Ala His Phe Gly Phe Asp Glu Gln
130 135 140

Leu Met His Gln Ile Arg Lys Ser Glu Tyr Thr Gln Pro Thr Pro Ile
 145 150 155 160
 Gln Cys Gln Gly Val Pro Val Ala Leu Ser Gly Arg Asp Met Ile Gly
 165 170 175
 Ile Ala Lys Thr Gly Ser Gly Lys Thr Ala Ala Phe Ile Trp Pro Met
 180 185 190
 Leu Ile His Ile Met Asp Gln Lys Glu Leu Glu Pro Gly Asp Gly Pro
 195 200 205
 Ile Ala Val Ile Val Cys Pro Thr Arg Glu Leu Cys Gln Gln Ile His
 210 215 220
 Ala Glu Cys Lys Arg Phe Gly Lys Ala Tyr Asn Leu Arg Ser Val Ala
 225 230 235 240
 Val Tyr Gly Gly Gly Ser Met Trp Glu Gln Ala Lys Ala Leu Gln Glu
 245 250 255
 Gly Ala Glu Ile Val Val Cys Thr Pro Gly Arg Leu Ile Asp His Val
 260 265 270
 Lys Lys Lys Ala Thr Asn Leu Gln Arg Val Ser Tyr Leu Val Phe Asp
 275 280 285
 Glu Ala Asp Arg Met Phe Asp Met Gly Phe Glu Tyr Gln Val Arg Ser
 290 295 300
 Ile Ala Ser His Val Arg Pro Asp Arg Gln Thr Leu Leu Phe Ser Ala
 305 310 315 320
 Thr Phe Arg Lys Lys Ile Glu Lys Leu Ala Arg Asp Ile Leu Ile Asp
 325 330 335
 Pro Ile Arg Val Val Gln Gly Asp Ile Gly Glu Ala Asn Glu Asp Val
 340 345 350
 Thr Gln Ile Val Glu Ile Leu His Ser Gly Pro Ser Lys Trp Asn Trp
 355 360 365
 Leu Thr Arg Arg Leu Val Glu Phe Thr Ser Ser Gly Ser Val Leu Leu
 370 375 380
 Phe Val Thr Lys Lys Ala Asn Ala Glu Glu Leu Ala Asn Asn Leu Lys
 385 390 395 400
 Gln Glu Gly His Asn Leu Gly Leu Leu His Gly Asp Met Asp Gln Ser
 405 410 415
 Glu Arg Asn Lys Val Ile Ser Asp Phe Lys Lys Lys Asp Ile Pro Val
 420 425 430

Leu Val Ala Thr Asp Val Ala Ala Arg Gly Leu Asp Ile Pro Ser Ile
 435 440 445
 Lys Thr Val Ile Asn Tyr Asp Val Ala Arg Asp Ile Asp Thr His Thr
 450 455 460
 His Arg Ile Gly Arg Thr Gly Arg Ala Gly Glu Lys Gly Val Ala Tyr
 465 470 475 480
 Thr Leu Leu Thr Pro Lys Asp Ser Asn Phe Ala Gly Asp Leu Val Arg
 485 490 495
 Asn Leu Glu Gly Ala Asn Gln His Val Ser Lys Glu Leu Leu Asp Leu
 500 505 510
 Ala Met Gln Asn Ala Trp Phe Arg Lys Ser Arg Phe Lys Gly Gly Lys
 515 520 525
 Gly Lys Lys Leu Asn Ile Gly Gly Gly Gly Leu Gly Tyr Arg Glu Arg
 530 535 540
 Pro Gly Leu Gly Ser Glu Asn Met Asp Arg Gly Asn Asn Asn Val Met
 545 550 555 560
 Ser Asn Tyr Glu Ala Tyr Lys Pro Ser Thr Gly Ala Met Gly Asp Arg
 565 570 575
 Leu Thr Ala Met Lys Ala Ala Phe Gln Ser Gln Tyr Lys Ser His Phe
 580 585 590
 Val Ala Ala Ser Leu Ser Asn Gln Lys Ala Gly Ser Ser Ala Ala Gly
 595 600 605
 Ala Ser Gly Trp Thr Ser Ala Gly Ser Leu Asn Ser Val Pro Thr Asn
 610 615 620
 Ser Ala Gln Gln Gly His Asn Ser Pro Asp Ser Pro Val Thr Ser Ala
 625 630 635 640
 Ala Lys Gly Ile Pro Gly Phe Gly Asn Thr Gly Asn Ile Ser Gly Ala
 645 650 655
 Pro Val Thr Tyr Pro Ser Ala Gly Ala Gln Gly Val Asn Asn Thr Ala
 660 665 670
 Ser Gly Asn Asn Ser Arg Glu Gly Thr Gly Gly Ser Asn Gly Lys Arg
 675 680 685
 Glu Arg Tyr Thr Glu Asn Arg Gly Ser Ser Pro Ser Gln Ser Arg Arg
 690 695 700
 Asp Trp Gln Ser Ala
 705

Met Ile Arg Ala Ala Pro Pro Pro Leu Phe Leu Leu Leu Leu Leu Leu
5 10 15

Asp Glu Ile Gln Arg Leu Pro Gly Leu Ala Lys Gln Pro Ser Phe Arg
35 40 45

Trp Phe Val Glu Ser Gln Lys Asp Pro Glu Asn Ser Pro Val Val Leu
65 70 75 80

Glu His Gly Pro Phe Leu Val Gln Pro Asp Gly Val Thr Leu Glu Tyr
100 105 110

Pro Ala Gly Val Gly Phe Ser Tyr Ser Asp Asp Lys Phe Tyr Ala Thr
130 135 140

Phe Arg Leu Phe Pro Glu Tyr Lys Asn Asn Lys Leu Phe Leu Thr Gly
165 170 175

Glu Ser Tyr Ala Gly Ile Tyr Ile Pro Thr Leu Ala Val Leu Val Met
180 185 190

Gln Asp Pro Ser Met Asn Leu Gln Gly Leu Ala Val Gly Asn Gly Leu
195 200 205

Ser Ser Tyr Glu Gln Asn Asp Asn Ser Leu Val Tyr Phe Ala Tyr Tyr
210 215 220

His Gly Leu Leu Gly Asn Arg Leu Trp Ser Ser Leu Gln Thr His Cys
225 230 235 240

Cys Ser Gln Asn Lys Cys Asn Phe Tyr Asp Asn Lys Asp Leu Glu Cys
245 250 255

Val Thr Asn Leu Gln Glu Val Ala Arg Ile Val Gly Asn Ser Gly Leu

260	265	270
Asn Ile Tyr Asn Leu Tyr Ala Pro Cys Ala Gly Gly Val Pro Ser His		
275	280	285
Phe Arg Tyr Glu Lys Asp Thr Val Val Val Gln Asp Leu Gly Asn Ile		
290	295	300
Phe Thr Arg Leu Pro Leu Lys Arg Met Trp His Gln Ala Leu Leu Arg		
305	310	315
Ser Gly Asp Lys Val Arg Met Asp Pro Pro Cys Thr Asn Thr Thr Ala		
325	330	335
Ala Ser Thr Tyr Leu Asn Asn Pro Tyr Val Arg Lys Ala Leu Asn Ile		
340	345	350
Pro Glu Gln Leu Pro Gln Trp Asp Met Cys Asn Phe Leu Val Asn Leu		
355	360	365
Gln Tyr Arg Arg Leu Tyr Arg Ser Met Asn Ser Gln Tyr Leu Lys Leu		
370	375	380
Leu Ser Ser Gln Lys Tyr Gln Ile Leu Leu Tyr Asn Gly Asp Val Asp		
385	390	395
Met Ala Cys Asn Phe Met Gly Asp Glu Trp Phe Val Asp Ser Leu Asn		
405	410	415
Gln Lys Met Glu Val Gln Arg Arg Pro Trp Leu Val Lys Tyr Gly Asp		
420	425	430
Ser Gly Glu Gln Ile Ala Gly Phe Val Lys Glu Phe Ser His Ile Ala		
435	440	445
Phe Leu Thr Ile Lys Gly Ala Gly His Met Val Pro Thr Asp Lys Pro		
450	455	460
Leu Ala Ala Phe Thr Met Phe Ser Arg Phe Leu Asn Lys Gln Pro Tyr		
465	470	475
		480

<210> 337

<211> 543

<212> PRT

<213> Homo sapiens

<400> 337

Met Ala Ala Ala Lys Ala Glu Met Gln Leu Met Ser Pro Leu Gln Ile
5 10 15

Ser Asp Pro Phe Gly Ser Phe Pro His Ser Pro Thr Met Asp Asn Tyr
20 25 30

Pro Lys Leu Glu Glu Met Met Leu Leu Ser Asn Gly Ala Pro Gln Phe

35					40					45					
Leu	Gly	Ala	Ala	Gly	Ala	Pro	Glu	Gly	Ser	Gly	Ser	Asn	Ser	Ser	Ser
50					55					60					
Ser	Ser	Ser	Gly	Gly	Gly	Gly	Gly	Gly	Gly	Gly	Gly	Ser	Asn	Ser	Ser
65					70					75					80
Ser	Ser	Ser	Ser	Thr	Phe	Asn	Pro	Gln	Ala	Asp	Thr	Gly	Glu	Gln	Pro
				85					90					95	
Tyr	Glu	His	Leu	Thr	Ala	Glu	Ser	Phe	Pro	Asp	Ile	Ser	Leu	Asn	Asn
			100					105					110		
Glu	Lys	Val	Leu	Val	Glu	Thr	Ser	Tyr	Pro	Ser	Gln	Thr	Thr	Arg	Leu
			115					120					125		
Pro	Pro	Ile	Thr	Tyr	Thr	Gly	Arg	Phe	Ser	Leu	Glu	Pro	Ala	Pro	Asn
			130					135					140		
Ser	Gly	Asn	Thr	Leu	Trp	Pro	Glu	Pro	Leu	Phe	Ser	Leu	Val	Ser	Gly
145					150					155					160
Leu	Val	Ser	Met	Thr	Asn	Pro	Pro	Ala	Ser	Ser	Ser	Ser	Ala	Pro	Ser
				165					170					175	
Pro	Ala	Ala	Ser	Ser	Ala	Ser	Ala	Ser	Gln	Ser	Pro	Pro	Leu	Ser	Cys
			180					185					190		
Ala	Val	Pro	Ser	Asn	Asp	Ser	Ser	Pro	Ile	Tyr	Ser	Ala	Ala	Pro	Thr
			195					200					205		
Phe	Pro	Thr	Pro	Asn	Thr	Asp	Ile	Phe	Pro	Glu	Pro	Gln	Ser	Gln	Ala
			210					215					220		
Phe	Pro	Gly	Ser	Ala	Gly	Thr	Ala	Leu	Gln	Tyr	Pro	Pro	Pro	Ala	Tyr
225					230					235					240
Pro	Ala	Ala	Lys	Gly	Gly	Phe	Gln	Val	Pro	Met	Ile	Pro	Asp	Tyr	Leu
				245					250					255	
Phe	Pro	Gln	Gln	Gln	Gly	Asp	Leu	Gly	Leu	Gly	Thr	Pro	Asp	Gln	Lys
				260				265						270	
Pro	Phe	Gln	Gly	Leu	Glu	Ser	Arg	Thr	Gln	Gln	Pro	Ser	Leu	Thr	Pro
			275					280					285		
Leu	Ser	Thr	Ile	Lys	Ala	Phe	Ala	Thr	Gln	Ser	Gly	Ser	Gln	Asp	Leu
			290					295					300		
Lys	Ala	Leu	Asn	Thr	Ser	Tyr	Gln	Ser	Gln	Leu	Ile	Lys	Pro	Ser	Arg
305					310					315					320
M t	Arg	Lys	Tyr	Pro	Asn	Arg	Pro	Ser	Lys	Thr	Pro	Pro	His	Glu	Arg
				325					330					335	

Pro Tyr Ala Cys Pro Val Glu Ser Cys Asp Arg Arg Phe Ser Arg Ser
340 345 350

Asp Glu Leu Thr Arg His Ile Arg Ile His Thr Gly Gln Lys Pro Phe
355 360 365

Gln Cys Arg Ile Cys Met Arg Asn Phe Ser Arg Ser Asp His Leu Thr
370 375 380

Thr His Ile Arg Thr His Thr Gly Glu Lys Pro Phe Ala Cys Asp Ile
385 390 395 400

Cys Gly Arg Lys Phe Ala Arg Ser Asp Glu Arg Lys Arg His Thr Lys
405 410 415

Ile His Leu Arg Gln Lys Asp Lys Lys Ala Asp Lys Ser Val Val Ala
420 425 430

Ser Ser Ala Thr Ser Ser Leu Ser Ser Tyr Pro Ser Pro Val Ala Thr
435 440 445

Ser Tyr Pro Ser Pro Val Thr Thr Ser Tyr Pro Ser Pro Ala Thr Thr
450 455 460

Ser Tyr Pro Ser Pro Val Pro Thr Ser Phe Ser Ser Pro Gly Ser Ser
465 470 475 480

Thr Tyr Pro Ser Pro Val His Ser Gly Phe Pro Ser Pro Ser Val Ala
485 490 495

Thr Thr Tyr Ser Ser Val Pro Pro Ala Phe Pro Ala Gln Val Ser Ser
500 505 510

Phe Pro Ser Ser Ala Val Thr Asn Ser Phe Ser Ala Ser Thr Gly Leu
515 520 525

Ser Asp Met Thr Ala Thr Phe Ser Pro Arg Thr Ile Glu Ile Cys
530 535 540

<210> 338

<211> 148

<212> PRT

<213> Homo sapiens

<400> 338

Pro Pro Ala Thr Ser Tyr Ala Pro Ser Asp Val Pro Ser Gly Val Ala
5 10 15

Leu Phe Leu Thr Ile Pro Phe Ala Phe Phe Leu Pro Glu Leu Ile Phe
20 25 30

Gly Phe Leu Val Trp Thr Met Val Ala Ala Thr His Ile Val Tyr Pro
35 40 45

Leu Leu Gln Gly Trp Val Met Tyr Val Ser Leu Thr Ser Phe Leu Ile
 50 55 60
 Ser Leu Met Phe Leu Leu Ser Tyr Leu Phe Gly Phe Tyr Lys Arg Phe
 65 70 75 80
 Glu Ser Trp Arg Val Leu Asp Ser Leu Tyr His Gly Thr Thr Gly Ile
 85 90 95
 Leu Tyr Met Ser Ala Ala Val Leu Gln Val His Ala Thr Ile Val Ser
 100 105 110
 Glu Lys Leu Leu Asp Pro Arg Ile Tyr Tyr Ile Asn Ser Ala Ala Ser
 115 120 125
 Phe Phe Ala Phe Ile Ala Thr Leu Leu Tyr Ile Leu His Ala Phe Ser
 130 135 140
 Ile Tyr Tyr His
 145

<210> 339

<211> 196

<212> PRT

<213> Homo sapiens

<400> 339

Met Pro Gly Met Phe Phe Ser Ala Asn Pro Lys Glu Leu Lys Gly Thr
 5 10 15
 Thr His Ser Leu Leu Asp Asp Lys Met Gln Lys Arg Arg Pro Lys Thr
 20 25 30
 Phe Gly Met Asp Met Lys Ala Tyr Leu Arg Ser Met Ile Pro His Leu
 35 40 45
 Glu Ser Gly Met Lys Ser Ser Lys Ser Lys Asp Val Leu Ser Ala Ala
 50 55 60
 Glu Val Met Gln Trp Ser Gln Ser Leu Glu Lys Leu Leu Ala Asn Gln
 65 70 75 80
 Thr Gly Gln Asn Val Phe Gly Ser Phe Leu Lys Ser Glu Phe Ser Glu
 85 90 95
 Glu Asn Ile Glu Phe Trp Leu Ala Cys Glu Asp Tyr Lys Lys Thr Glu
 100 105 110
 Ser Asp Leu Leu Pro Cys Lys Ala Glu Glu Ile Tyr Lys Ala Phe Val
 115 120 125
 His Ser Asp Ala Ala Lys Gln Ile Asn Ile Asp Phe Arg Thr Arg Glu
 130 135 140

Ser Thr Ala Lys Lys Ile Lys Ala Pro Thr Pro Thr Cys Phe Asp Glu
145 150 155 160

Ala Gln Lys Val Ile Tyr Thr Leu Met Glu Lys Asp Ser Tyr Pro Arg
165 170 175

Phe Leu Lys Ser Asp Ile Tyr Leu Asn Leu Leu Asn Asp Leu Gln Ala
180 185 190

Asn Ser Leu Lys
195

<210> 340

<211> 316

<212> PRT

<213> Homo sapiens

<400> 340

Met Ala Thr Phe Val Glu Leu Ser Thr Lys Ala Lys Met Pro Ile Val
5 10 15

Gly Leu Gly Thr Trp Lys Ser Pro Leu Gly Lys Val Lys Glu Ala Val
20 25 30

Lys Val Ala Ile Asp Ala Gly Tyr Arg His Ile Asp Cys Ala Tyr Val
35 40 45

Tyr Gln Asn Glu His Glu Val Gly Glu Ala Ile Gln Glu Lys Ile Gln
50 55 60

Glu Lys Ala Val Lys Arg Glu Asp Leu Phe Ile Val Ser Lys Leu Trp
65 70 75 80

Pro Thr Phe Phe Glu Arg Pro Leu Val Arg Lys Ala Phe Glu Lys Thr
85 90 95

Leu Lys Asp Leu Lys Leu Ser Tyr Leu Asp Val Tyr Leu Ile His Trp
100 105 110

Pro Gln Gly Phe Lys Ser Gly Asp Asp Leu Phe Pro Lys Asp Asp Lys
115 120 125

Gly Asn Ala Ile Gly Gly Lys Ala Thr Phe Leu Asp Ala Trp Glu Ala
130 135 140

Met Glu Glu Leu Val Asp Glu Gly Leu Val Lys Ala Leu Gly Val Ser
145 150 155 160

Asn Phe Ser His Phe Gln Ile Glu Lys Leu Leu Asn Lys Pro Gly Leu
165 170 175

Lys Tyr Lys Pro Val Thr Asn Gln Val Glu Cys His Pro Tyr Leu Thr
180 185 190

Gln Glu Lys Leu Ile Gln Tyr Cys His Ser Lys Gly Ile Thr Val Thr
 195 200 205

Ala Tyr Ser Pro Leu Gly Ser Pro Asp Arg Pro Trp Ala Lys Pro Glu
 210 215 220

Asp Pro Ser Leu Leu Glu Asp Pro Lys Ile Lys Glu Ile Ala Ala Lys
 225 230 235 240

His Lys Lys Thr Ala Ala Gln Val Leu Ile Arg Phe His Ile Gln Arg
 245 250 255

Asn Val Ile Val Ile Pro Lys Ser Val Thr Pro Ala Arg Ile Val Glu
 260 265 270

Asn Ile Gln Val Phe Asp Phe Lys Leu Ser Asp Glu Glu Met Ala Thr
 275 280 285

Ile Leu Ser Phe Asn Arg Asn Trp Arg Ala Cys Asn Val Leu Gln Ser
 290 295 300

Ser His Leu Glu Asp Tyr Pro Phe Asn Ala Glu Tyr
 305 310 315

<210> 341

<211> 422

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(422)

<223> n = A,T,C or G

<400> 341

gatganattn ttncnagaga gaggaagang ctattcagtt ggatgggatt aaatgcatca	60
caaataagag aacttagaga gaagtcggaa aagtttgcc tccaagcccg aagttaacag	120
aatgatgaaa cttatcatca attcattgta taaaaataaa gagattttcc tgagagaact	180
gatttcaaat gcttctgatg ctttagataa gataaggcta atatcactga ctgatgaaaa	240
tgctctttct ggaaatgagg aactaacagt caaaattaag tgtgataagg agaagacctg	300
ctgcatgtca cagacaccgg ttaggaatg accagagaag agttgggtta aaaccttggt	360
accatagcca aatctgggac aagcgagttt ttaacaaaa tgactgaagc acaggaagat	420
gg	422

<210> 342

<211> 472

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(472)

<223> n = A,T,C or G

120

<400> 342

ctggagaagg	tgtgcagggg	aaaccctgct	gatgtcaccg	aggccagggt	gtctttctac	60
tcgggacact	cttcctttgg	gatgtactgc	atggtgttct	tggcgctgna	tgtgcaggca	120
cgactctgtt	ggaagtgggc	acggctgctg	cgacccacag	tccagttctt	cctggtggcc	180
tttgccctct	acgtgggcta	cacccgcgtg	tctgattaca	aacaccactg	gagcgatgtc	240
cttggtggcc	tcctgcaggg	ggcactgggtg	gctgccctca	ctgtctgcta	catctcagac	300
ttcctcaaag	cccgaccccc	acagcactgt	ctgaaggagg	aggagctgga	acggaagccc	360
agcctgtcac	tgacgttgac	cctgggcgag	gctgaccaca	accactatgg	ataccgcgac	420
tcctcctcct	gaggccggac	cccgccagag	cagggagcta	ctgtgagtcc	ag	472

<210> 343

<211> 139

<212> DNA

<213> Homo sapien

<400> 343

gtcctggggc	ttccccttcc	ctcaagccag	ggctcctcct	cctgtcgtgg	gtcattgtg	60
accactggcc	tctctacagc	acggcctgtg	gcctgttcaa	ggcagaacca	cgacccttga	120
ctccccgggtg	gggaggtgg					139

<210> 344

<211> 235

<212> DNA

<213> Homo sapien

<400> 344

ctgcggggctc	agcacagtag	acatgactgg	gatccccacc	ttggacaacc	tccagaaggg	60
agtccaattt	gctctcaagt	accagtcgct	gggccagtgt	gtttacgtgc	attgtaaggc	120
tgggcgctcc	aggagtgcc	ctatggtggc	agcatacctg	attcaggtgc	acaaatggag	180
tccagaggag	gctgtaagag	ccatcgccaa	gatccggtca	tacatccaca	tcagg	235

<210> 345

<211> 458

<212> DNA

<213> Homo sapien

<400> 345

ctgtaagggtg	ctattcagtc	ctgtgaccct	tattttggaa	tgtctttcat	tactgttgct	60
ctgtttttgtg	acttcctggg	aaaccgccta	ctttggtgtg	gtgtcacctt	gagctgtgca	120
cataggacac	cagttttgac	ttaacctaac	aggcagtttt	tatctctagc	tttttcaagc	180
caggtattga	gcagtttctt	ggccaatggc	ctgagaaacc	acctgtccct	gtcaaggggt	240
gatttttattg	gttttaagtg	gggaagtaat	cccatgtact	tatttcttaa	atacctagga	300
agttcttctt	ggtggctcct	cttgccctc	ccctctttct	cccccaacc	accatcctgc	360
aaggcaagga	atggcctctc	cctccacaga	ggcaacggct	gcagagggag	caactgtggct	420
gccatccag	ttcctcttca	aagccaaaca	gacacgcy			458

<210> 346

<211> 525

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(525)

<223> n = A,T,C or G

<400> 346

ccagagcaca	acgcctcacc	atggactgga	cctggaggat	nntcttnnng	gtggcagcag	60
ccacaggtgt	ccactcccaa	gcccaacttg	tgcagtctgg	ggctgaggag	aagaagcctg	120
gggcctcagt	gactatttct	tgtaaggctt	ctggatata	ncttactaaa	tatactttac	180
attgggtgcg	ccaggccccc	cccggacaaa	gacctgaatg	ggtgggatgg	atcaacactg	240
gcattgatac	cgttaaatat	tcacagaagt	ttcaggacag	agtctccatt	acctgggact	300
catccgcgac	cacagnctac	ctgnanntga	gtagcctgga	atccgaagac	acggctgtgt	360
attactgtgc	gagacttang	gcccgttcgc	tgtggtggga	cttaatgacg	cttttgacat	420
ctggggccaa	gggacagtgg	tcaccgtctc	ttcanggagt	gcattcgccc	caaccctttt	480
ccccctctct	cctgtgaaga	attccccgnc	ggatacgagc	agcgt		525

<210> 347

<211> 423

<212> DNA

<213> Homo sapien

<400> 347

ccagacgctg	acttgtttct	gagtccttaa	gcaggaagga	tttgaaatcc	tggagcttgg	60
cagtcttgct	cttcacctct	aagccaatgt	tgacccttc	atctataaag	tccacaactc	120
tccggaagtc	atcctcacgg	aactgtcgag	aagttaaggc	tggggcccca	agccgcaggc	180
cggccggtgt	gatggcactt	cggctccag	gacagggtgt	cttggtggca	gtgatggata	240
caagctctag	cacccgctca	gcccagctc	catccaggcc	cttggggccgc	aggtccacca	300
gcaccaggtg	gttgctcagta	ccacctgata	ccagttagta	gcctcgctct	agcagggcat	360
ctgccatggc	ccgagcattc	ttcagaacct	gcaggagta	ctcccgaac	atgggggtgc	420
agg						423

<210> 348

<211> 513

<212> DNA

<213> Homo sapien

<400> 348

cctctaggcc	tgatgctctc	agaggcaata	gaagaaaagt	aaaaggaagg	tctcacttca	60
cagacaatga	aaccttccta	accctcttcc	ccactaccca	caactcccta	cactgccaat	120
ctaaataaaa	agaggacaat	gcatgagtgt	gagatacaca	tacacacaca	cacatacaca	180
cacacacacg	cacagcttcc	tttcagccaa	agaactgcaa	aatccttccc	cgggaaggagg	240
acaactggca	acaccaatca	aggcttggtg	gtctaagggtg	atggctggaa	tcatgtgaga	300
ctggtaaaaa	tccagggaga	aatgtttca	ccttcagctc	attcccaagt	ctctatgaag	360
cccgccccac	ttccacatag	gggaactgtg	gctctggggg	cagcctctgc	agctactcag	420
aataggtggg	aggaggggct	ggctttgagg	ctgccttagc	catgaggctc	tttgccatagg	480
aatagctgga	gatgggagct	gcagggggct	cag			513

<210> 349

<211> 231

<212> DNA

<213> Homo sapien

<400> 349

ccttatttct	cttgctcttt	cgtacaggga	ggaatttgaa	gtagatagaa	accgacctgg	60
attactccgg	tctgaactca	gatcacgtag	gactttaatc	gttgaacaaa	cgaaccttta	120
atagcggctg	caccatcggg	atgtcctgat	ccaacatcga	ggtcgtaaac	cctattgttg	180
atatggactc	tagagtagga	ttgcgctggt	atccctaggg	taacttgttc	c	231

<210> 350

<211> 341
 <212> DNA
 <213> Homo sapien

<400> 350
 ctgcccaagg gcgttcgtaa cgggaatgcc gaagcgtggg aaaaagggag cgggtggcgga 60
 agacggggat gagctcagga cagagccaga ggccaagaag agtaagacgg ccgcaaagaa 120
 aaatgacaaa gaggcagcag gagagggccc agccctgtat gaggaccccc cagatcagaa 180
 aacctcacc agtggcaaac ctgccacacc caagatctgc tcttggaatg tggatgggct 240
 tcgagcctgg attaagaaga aaggattaga ttgggtaaaag gaagaagccc cagatatact 300
 gtgccttcaa gagaccaa atgttcagagaa caaactacca g 341

<210> 351
 <211> 256
 <212> DNA
 <213> Homo sapien

<400> 351
 ggcgttgggg acggtttag gacgtggctc tttattcgtg agttttccat ttacctccgc 60
 tgaacctaga gcttcagacg ccctatggcg tccgcctcga cccaaccggc ggccttgagc 120
 gctgagcaag caaagggtgt cctcgcggag gtgatccagg cgttctccgc cccggagaat 180
 gcagtgcgca tggacgaggc tcgggataac gcctgcaacg acatgggtaa gatgctgcaa 240
 ttcgtgctgc ccgtgg 256

<210> 352
 <211> 368
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(368)
 <223> n = A,T,C or G

<400> 352
 cctttcttgt aagtgaagaa naaggaatgc agcaaagaag agttcgacat tggagtcctt 60
 agttccatca ggatcccatt cgcagccttt agcatcatgt agaagcaaac tgcacctatg 120
 gctgagatag gtgcaatgac ctacaagatt ttgtgttttc tagctgtcca ggaaaagcca 180
 tcttcagtct tgctgacagt caaagagcaa gtgaaacctt ttccagccta aactacataa 240
 aagcagccga accaatgatt aaagacctct aaggctccat aatcatcatt aaatatgcc 300
 aaactcattg tgacttttta ttttatatac aggattaaaa tcaacattaa atcatcttat 360
 ttacatgg 368

<210> 353
 <211> 368
 <212> DNA
 <213> Homo sapien

<400> 353
 ctgaggggtg cgagtaagca atgaggatgg gctataaagc tgttaactgg ctaagggcca 60
 tccttgggca ggcatttcag acacatctgt agagagggca gtagcatctc cgataggcca 120
 gctctgaagg aagcttaatg cttataacag tcacactgca taaattagct tagaatgctc 180
 tcttgggtaa aaaatattaa tagtgtatat gcacttgaag agcaaaattc ctcaagaaaa 240
 aaagtttaat agcaaggagt ttccatcagt cccggtcttt gtgaggatta ccacaacaaa 300
 cacttaaaag gatacaacag gtacttatta aatgctgcct tgccttttac ctcttccttt 360

tttttttt

368

<210> 354
 <211> 380
 <212> DNA
 <213> Homo sapien

<400> 354
 ccatggcttc tcacccagac agtctttctg ggcaacttgg ggaagcccct gttctgctca 60
 agtctcacc ccacgaagag gtgggggaag ggggccttgg ttttccagga agacagggtg 120
 gagagcacga gtcactacaa agcagtaaaa gtgaatggtg tctccagggg ctgggtccag 180
 aacaccacgg agagccccag ccataaagggt gtgttccgcc tctggcctgc aggaatctct 240
 ttgaatctct ttgattggtg gctccaagag caatgggaag tcaacagcca ggaggctgga 300
 ctgggttccc tgggacccc aggtcccaga gctgctgggc agtggtgtgc ggcaaagaag 360
 aaagggtcaa gagggtcagg 380

<210> 355
 <211> 347
 <212> DNA
 <213> Homo sapien

<400> 355
 ccagtggagg ggtgggggta tcgatccgc cgggggctgg cttggttgc ggtgccctga 60
 gcccttctct gccgcctgg gtgttgcct cactgatgga ggtaggcgtc cagccagatg 120
 tcaccagact tcttcgggga cctgacgatg tccaccagcg cggtgaggaa ggycttccact 180
 tcgtagctga ggcctgtgctt ggcacacagc gacttgacca gcggggccac ccggctgtag 240
 ttgtgtctcg gcatcctggg gaagagggtg tgctcgatct ggaagttgag gtgcccgctg 300
 aaccagttgg tgaagagtga gggctccacg ttgcaggtgg ctgccag 347

<210> 356
 <211> 157
 <212> DNA
 <213> Homo sapien

<400> 356
 cctggagctg ctgaagactg ctattgggaa agctggctac actgataagg tggatcatcg 60
 catggacgta gcggcctccg agttcttcag gtctgggaag tatgacctgg acttcaagtc 120
 tcccgatgac ccagcaggt acatctcgcc tgaccag 157

<210> 357
 <211> 323
 <212> DNA
 <213> Homo sapien

<400> 357
 ccatacaggg ctgttgccca ggccttagag gtcactctc gtaccctgat ccagaactgt 60
 ggggccagca ccacccgtct acttacctc cttcgggcca agcacacca ggagaactgt 120
 gagacctggg gtgtaaatgg tgagacgggt actttggtgg acatgaagga actgggcata 180
 tgggagccat tggctgtgaa gctgcagact tataagacag cagtggagac ggcagttctg 240
 ctactgcgaa ttgatgacat cgtttcaggc cacaaaaaga aaggcgatga ccagagccgg 300
 caaggcgggg ctccctgatgc tgg 323

<210> 358
 <211> 555
 <212> DNA

<213> Homo sapien

<400> 358

aaaagggttc	taaaaacatga	cggagggttga	gatgaagctt	cttcattggag	taaaaaatgt	60
atattaaaga	aaattgagag	aaaggactac	agagcccccga	gttaatacca	atagaagggc	120
aatgctttta	gattaaaatg	aaggtgactt	aaacagctta	aagtttagtt	taaaagtgtg	180
aggtgattaa	aataatttga	aggcgatctt	ttaaaaagag	attaaaccga	aggtgattaa	240
aagaccttga	aatccatgac	gcaggggagaa	ttgcgtcatt	taaagcctag	ttaacgcatt	300
tactaaacgc	agacgaaaat	ggaaagatta	attgggagtg	gtaggatgaa	acaatttgga	360
gaagatagaa	gtttgaagtg	gaaaactgga	agacagaagt	acgggaaggc	gaagaaaaga	420
atagagaaga	tagggaaatt	agaagataaa	aacatacttt	tagaagaaaa	aagataaatt	480
taaacctgaa	aagtaggaag	cagaagaaaa	aagacaagct	aggaaacaaa	aagctaaggg	540
caaatgtac	accac					555

<210> 359

<211> 549

<212> DNA

<213> Homo sapien

<400> 359

ctgccaggct	gaaaagaagc	ctcagctccc	acaccgccct	cctcaccgcc	cttcctcggc	60
agtcacttcc	actggtggac	cacgggcccc	cagccctgtg	tcggccttgt	ctgtctcagc	120
tcaaccacag	tctgacacca	gagcccactt	ccatcctctc	tgggtgtgagg	cacagcgagg	180
gcagcatctg	gaggagctct	gcagcctcca	cacctaccac	gacctcccag	ggctgggctc	240
aggaaaaacc	agccactgct	ttacaggaca	gggggttgaa	gctgagcccc	gcctcacacc	300
cacccccatg	cactcaaaga	ttggatttta	cagctacttg	caattcaaaa	ttcagaagaa	360
taaaaaatgg	gaacatacag	aactctaaaa	gatagacatc	agaaattgtt	aagttaagct	420
ttttcaaaaa	atcagcaatt	ccccagcgta	gtcaagggtg	gacactgcac	gctctggcat	480
gatgggatgg	cgaccgggca	agctttcttc	ctcgagatgc	tcttgctgct	tgagagctat	540
tgctttggt						549

<210> 360

<211> 289

<212> DNA

<213> Homo sapien

<400> 360

tttaaatttt	actagtgtta	cttaatgtat	attctaaaaa	gagaatgcag	taactaatgc	60
cctaaatggt	tgatctctgt	ttgtcattac	tttttcaaaa	ttattttttt	ctgtaaagta	120
taatatataa	aacttcttgc	ttaaattgaa	tttctatatt	agtggttaat	tgcagtttat	180
taaagggatc	attatcagta	atttcatagc	aactgttcta	gtgttttgtg	tttttaaaac	240
agaattagga	atttgagata	tctgattata	tttttcatat	gaatcacag		289

<210> 361

<211> 311

<212> DNA

<213> Homo sapien

<400> 361

ctgttcagta	tggcaaaggg	cagacttact	ccttcattcca	ctctgctgcc	ttgatgaggt	60
gaacacactg	gaataagatg	gagggcagga	tacctgccaa	agcctgagga	atgagatgat	120
ctgaaacaat	tgggcaaagg	ctggacattt	caaaaagctg	acttccaact	gcagtttatg	180
ggtatagaat	ttgatgcttc	cctcaagtcc	tgactgctct	ttctgaggca	gccaggctag	240
gccaaagaaat	gagctgctcc	agcttctcca	gagcacagca	gcctcccagg	gcctgtcagc	300
atctgcagca	g					311

<210> 362
<211> 496
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(496)
<223> n = A,T,C or G

<400> 362
ccagtttcta aaanaatgca catttaaaga gaagcatcta ccacggcttt aaaacaaaac 60
aactctgaga tgaacaatat gtgttatact cagagattaa caatctcaat catacatact 120
gattctttca gacatttaaat aaccactaca tttttttgca ttaatgaagt ttgactatat 180
gtgtaaaggg actaaatatt ttgtcaacag cctgttcttt gttcattctt ttctggatag 240
cgtgtcctct gtattgcggt agatttatac attctgttgc ctaaataatgt gtgtaaaatg 300
agctgataaa ctggagtact acttaaaaaa aagtctgtga ttataaagat gcatatgctt 360
tctatgtgaa tataagcttg tgcacaatgt ttaaaagaaa aacaatgaat tagaagagat 420
ccccgtccc ccagtctgac atatttcata cagaatgttt aaaagaaaaa ctctgctagt 480
cttggcaaac atttgg 496

<210> 363
<211> 673
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(673)
<223> n = A,T,C or G

<400> 363
ccaagaggga gataanacaa acttctcaaa caaaaagaaa agaaaaacga atgattcatc 60
tgctttaatc agtgtgatta atgcagcacc cattgccccg ggaaccggtt ctgctgtact 120
atctggatac taaaatgtta cggaagtagc tctttgttct ccctcactct gcccttagtt 180
aatagaaatt cagactcgcc aagtaaggct ttgtgcatag tgtcttcatg tcgcgtatag 240
ttgagcgcgt tcttagcagt tggcttcatg gacagctcat tagtgttttg acttttctta 300
cccagcggtta attgaattct tgcttttaga caacttcctt tttgtagtgg tgaaccttgc 360
ccttttagtac agttcaagtg aatctggata attgttcac tttgtcttag cttagatacc 420
atgtagtggt ctgtggctac aggaagctgg ttctgtctgc ttccacagtc tgcttaaaaa 480
actgtctgac ttcgtgaata tagagaccaa gtttaccact tctgatgaag agaccaatta 540
agattcattc ctcatctctgt ttctttccag tgggagaaga gtcccatga aataagatga 600
aactgattcc atgcactagt acatgtaggc ttctcccttg cgcaaagctt aacaatttgt 660
aggaaacttt ggg 673

<210> 364
<211> 495
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(495)
<223> n = A,T,C or G

<400> 364

ccaaatgttt	gcncaagact	agcagagttt	ttcttttaaa	cattctgtat	gaaatatgtc	60
agactggggg	acggggggatc	tcttctaatt	cattgttttt	cttttaaaaca	ttgtgcacaa	120
gcttatattc	acatagaaaag	catatacatc	ttataaatca	cagacttttt	tttaagtagt	180
actccagttt	atcagctcat	tttacacaca	tatttaggca	acagaatgta	taaatctacc	240
gcaatacaga	ggacacacta	tccagaaaag	aatgaacaaa	gaacaggctg	ttgcaaaaat	300
athtagtccc	tttacacata	tagtcaaact	tcattaatgc	aaaaaatgta	gtggttatta	360
aatgtctgaa	agaatcagta	tgtatgattg	agattgttaa	tctctgagta	taacacatat	420
tgttcatctc	agagttgttt	tgttttaaag	ccgtggtaga	tgcttctctt	taaatgtgca	480
tttttagaa	actgg					495

<210> 365

<211> 291

<212> DNA

<213> Homo sapien

<400> 365

aactgacaag	cccttgcgcc	tgcctctcca	ggatgtctac	aaaattgggtg	gtattggtac	60
tgttcctggt	ggcccagtg	gagactgggtg	ttctcaaacc	cggtaggtg	gtcacctttg	120
ctccagtc	cggtacaacg	gaagtaaaat	ctgtcgaaat	gcaccatgaa	gctttgagtg	180
aagctcttcc	tggggacaat	gtgggcttca	atgtcaagaa	tgtgtctgtc	aaggatgttc	240
gtcgtggcaa	cgttgctggt	gacagcaaaa	atgaccacc	aatggaagca	g	291

<210> 366

<211> 277

<212> DNA

<213> Homo sapien

<400> 366

ctggatgggtg	cctcagaagg	tgcattctgc	ttctgcaggg	gcttgaaaca	ccaaggcact	60
ccagggatcc	tggagtcaaa	gcagcagccc	cggttgttg	actccttggg	ggtgacatgg	120
gggtagcccc	cagtccaccc	tgtccttggc	tggcacggca	cactggtttg	cagacaggcc	180
cacgtactcc	tcagcagagc	tggaggacaa	gcaaggccag	gaccagcccc	agcatgcaga	240
gcgctctggc	agccatgacc	accgtgggct	ccgggac			277

<210> 367

<211> 311

<212> DNA

<213> Homo sapien

<400> 367

ccagagctgc	ggggcctcag	tacacggagc	tggtccggat	gccacagcac	agcaccatgc	60
tcaggatcat	ctcgaagatc	atgatcacag	cgaccacgat	ggcagcaatg	ccgatgaggt	120
acagcttccc	ggagaagagg	tcacgatct	tctggtaggca	gtcctccttg	aagaggttgc	180
tgatgatgtt	gctgcccag	ggacacaaat	tggtcttgag	cactgaggtg	gtcaaagcag	240
tcagtgtgct	ggagccacag	cagtcaagcg	tctcgtggaa	ggtcttcacc	acagccttgg	300
cgttgttggc	g					311

<210> 368

<211> 384

<212> DNA

<213> Homo sapien

<400> 368

ccaaaggggt	ctctagctgc	tgctctgctg	ctcctgctca	tggatgagtt	tggcgatggg	60
gccggtgatg	ccgccctatca	aggtccagta	ctcatcgaag	ctgatgcgcc	catcaggatt	120
ggcatccagg	ttctggatga	gcttatccgc	agccttccgg	ttccctgtgt	ccgacagcat	180
gtgggttcagc	tctttctgga	gcatctcgcg	gaagctgctc	ttgctgatct	tgttcttgac	240
caggctgtac	ctagacacat	atttgtagaa	gttttccacc	aggacaatga	ctgccttctc	300
cagctccgtg	tagcaagtct	gacatctccc	tgcttcgcct	gctggcgggg	cctaaggcgg	360
gggccaagcc	cagttacagc	ccag				384

<210> 369

<211> 216

<212> DNA

<213> Homo sapien

<400> 369

ccaagtgcc	ggtggctttc	agcagcttcc	tacgatcagc	cgaagaaagc	agaagctctg	60
gaggctgcc	tcgagaacct	caatgaagcc	aagaactatt	ttgcaaagg	tgactgcaaa	120
gagcgcatca	gggacgtcgt	ttacttccag	gccagactct	accataccct	ggggaagacc	180
caggagagga	accggtgtgc	gatgctcttc	cggcag			216

<210> 370

<211> 561

<212> DNA

<213> Homo sapien

<400> 370

ctggctcctt	cttttgtggg	cgtttggggg	atgggctggg	ttgggggttta	ggtgcagaga	60
atggtttggg	gccactgcgt	actggaccac	tctgagcctt	cagggcaggg	ttcttgtgag	120
tcttcatgtc	atcagataca	tgtttcaggg	catgtgtaat	gctctcccc	tgattaatct	180
gcgcgaacag	tgctgagcgg	gaagcagact	catctgagcc	tgaactggta	gagactgggg	240
gaggaggggg	gcctgggtgga	gggggaggag	gacctgatcc	ggcagagggg	ccagatggca	300
gtccgctcag	ttcttttgcc	acaggccccg	ttttgctcca	ggccagtccg	gtgggatgga	360
actccttaat	gtaagcctgc	agctctgtcc	atatacttaa	ataagctttg	acctagtcta	420
catgcttctt	atccacatct	ttgtactctt	tgaggactcg	gtttgtataa	aacatggcgg	480
catcattcat	ttctttcgca	taagggccag	gcttggggagc	catagccacc	cagcccaggg	540
cctggatact	ttcgctgaca	g				561

<210> 371

<211> 518

<212> DNA

<213> Homo sapien

<400> 371

cccacttcca	tcgctctctg	gtgtgaggca	cagcgagggc	agcatctgga	ggagctctgc	60
agcctccaca	cctaccacga	cctcccaggg	ctgggctcag	gaaaaaccag	ccactgcttt	120
acaggacagg	gggttgaagc	tgagccccgc	ctcacaccca	cccccatgca	ctcaaagatt	180
ggattttaca	gctacttgca	attcaaaatt	cagaagaata	aaaaatggga	acatacagaa	240
ctctaaaaga	tagacatcag	aaattgttaa	gttaagcttt	ttcaaaaaat	cagcaattcc	300
ccagcgtagt	caagggtgga	caactgcacgc	tctggcatga	tgggatggcg	accgggcaag	360
ctttcttcc	cgagatgctc	tgctgcttga	gagctattgc	tttggttaaga	tataaaaagg	420
ggtttctttt	tgtctttctg	taagggtggac	ttccagcttt	tgattgaaag	tcctagggtg	480
attctatttc	tgctgtgatt	tatctgctga	aagctcag			518

<210> 372

<211> 335

<212> DNA

<213> Homo sapien

<400> 372

ctggaggctg	ggtgcaccct	gcccagatcc	acacctgtac	cccggcggaa	aggctcatgg	60
gcattgaaga	cggtggtgaa	aaagccaaag	ggaaaagcac	caacaccaa	tgagaagtgg	120
aagcccccg	tatcaccaaa	tggctggaat	ccccctctgc	tctccggagc	tggctctctgg	180
ccctgggggc	ggggtggagt	ttttaatctg	ggatcctggg	gcttctggct	ccctcgccca	240
taaagcggga	caaccttctc	tctgctgac	ccagctttac	atactggaca	ctcttgccgt	300
tctggccgtg	tctccagcca	ctgatgaaga	catgg			335

<210> 373

<211> 467

<212> DNA

<213> Homo sapien

<400> 373

ccactagctg	aatcttgaca	tggaaggttt	tagctaatagc	caagtggaga	tgagaaaaat	60
gctaagttga	cttaggggct	gtgcacagga	actaaaaggc	aggaaagtac	taaataattgc	120
tgagagcatc	caccccagga	aggactttac	cttccaggag	ctccaaactg	gcaccacccc	180
cagtgtcac	atggctgact	ttatcctccg	tgttccattt	ggcacagcaa	gtggcagtgt	240
ctccaccacc	tatgatggtg	atgcagcccc	tagaagtggc	tttcaccacc	tcattccatga	300
gagctttggt	tccccgggca	aaagcttccc	attcaaatac	ccccacagga	ccattccaca	360
caatctgctt	agcccagagt	acagcctcag	catacttctt	gctgctttca	ggaccacagt	420
ccaagcccat	ccagccagca	ggtacgccag	aagccacagt	ggcttgg		467

<210> 374

<211> 284

<212> DNA

<213> Homo sapien

<400> 374

tttccgtaaa	agcgtgtaac	aagggtgtaa	atatttataa	ttttttatac	ctgttgtag	60
acccgagggg	cggcggcgcg	gttttttatg	gtgacacaaa	tgtatatattt	gctaacagca	120
attccaggct	cagtattgtg	accgcggagc	cacaggggac	cccacgcaca	ttccgttgcc	180
ttacccgatg	gcttgtagcg	cggagagaac	cgattaaaac	cgtttgagaa	actcctccct	240
tgtctagccc	tgtgttcgct	gtggacgctg	tagaggcagg	ttgg		284

<210> 375

<211> 307

<212> DNA

<213> Homo sapien

<400> 375

cctactcttc	tccgtccatt	gtactatctg	cccgtggtgg	ggatggcagt	aggatcatat	60
ttgatgactt	ccgagaagca	tattattggc	tccgtcataa	tactccagag	gatgcgaagg	120
tcattgtcctg	gtgggattat	ggctatcaga	ttacagctat	ggcaaaccga	acaatttttag	180
tggacaataa	cacatggaat	aatacccata	tttctcgagt	agggcaggca	atggcgcca	240
cagaggaaaa	agcctatgag	atcatgaggg	agctcgatgt	cagctatgtg	ctggtcattt	300
ttggagg						307

<210> 376

<211> 650

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(650)

<223> n = A,T,C or G

<400> 376

ccattgncn	ctnacgtgat	gtcatcatct	gccaggtcat	cttggcaaaa	gtcggagcat	60
ttctcagtca	ctgcaaagta	gcccttctcg	ttggagcacc	ggaagagacg	tgtgtgtttc	120
atgtactcgg	catcgtcatc	atagggcttc	tgtgcccaca	tgcccaccca	gaagaagttc	180
tcagggtcct	caccttcgtt	gataacctgc	ttgctgtagg	aggtgtcaaa	catgggtgtc	240
aggatgtctt	ctgccaaactt	ggcttcgtca	gggtctgatg	cccggcccac	ccaggcatac	300
acgatgccct	ggttgtcctc	actctcaaag	ggaaccttga	ggatgaagca	gaactcggag	360
ttgaggaggc	tggagtcggt	gttgatctgg	atgcaccggg	tgcagagggc	gctgccgttg	420
gtgcggatct	ggtagaggct	gggctgttgg	gcgccctgga	ccgccttcct	cttgccccgg	480
tggatgatga	acttcctctt	gaaatgggac	aggaacttgg	ggttctcctg	ctgctgcgtc	540
atgcgtacca	cctccagctt	cccagggaag	aggtctcga	acttcttttg	caggctgaag	600
gtgaagggtg	cccacccata	ttgggaggct	ttcacggccc	tgccagaagt		650

<210> 377

<211> 306

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(306)

<223> n = A,T,C or G

<400> 377

tctagatgca	tgctcgagcg	gccgccagtg	tgatgganat	ctgcagaatt	cgcccttcga	60
gcggccgccc	gggcagggtc	gggtgctgcc	ttcacctgcc	aggcccttcc	ccgctagctt	120
ggggcgagca	gagctgcgtc	cagtggaaact	aaagccgttc	caggattatc	aaaaactgag	180
cagcaacctt	gggggacctg	gatcatcacg	gactccccca	actggaaggt	ccttctctgg	240
cctcaattcc	cgtctcaagg	ccacgccttc	cacctacagt	ggagtcttcc	gcaccacagc	300
cgtcga						306

<210> 378

<211> 199

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(199)

<223> n = A,T,C or G

<400> 378

ccacangtgg	cacttgggtg	tggctcctct	gttatttgtc	ctcatgtgag	aaagcagatc	60
atctccaaat	cttgccattt	gtatactttt	ggtaggagact	tggatgtcat	atcttctttg	120
ttttgggttt	tcttccctag	cttattttgt	ggcttttaaa	gaagtggatt	gtattgtgag	180
atcctgtgat	tcctgggtgg					199

<210> 379

<211> 216

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(216)

<223> n = A,T,C or G

<400> 379

ccagggcang	tcatacaagag	gggcattgtc	ttgcatgcgg	cctgccgtgt	ccaccagcac	60
cacgtcaaag	ccttggttac	gtgcaaaagc	aatggcttcc	atggcaatgc	cagcagcatc	120
cttgccatag	cccttttcaa	acaactgcac	catggtgcgg	ccaccatgct	tctctggagg	180
gtgtagggca	ctcaaacgcc	gggtgtgtgt	acgcag			216

<210> 380

<211> 555

<212> DNA

<213> Homo sapien

<400> 380

ccatgggcct	tcctttccac	taaaaggaat	tccgaacagc	aaaaagaagg	tcttgagata	60
gtgaaaatgg	tgatgatata	tttagaagg	gaagatgggt	tggatgaaat	ttattcattc	120
agtgcagagtc	tgagaaaact	gtgcgtcttc	aagaaaattg	agaggcattc	cattcactgg	180
ccctgccgac	tgaccattgg	ctccaatttg	tctataagga	ttgcagccta	taaatcgatt	240
ctacaggaga	gagttaaaaa	gacttggaca	gttgtggatg	caaaaaccct	aaaaaaagaa	300
gatatacaaa	aagaaacagt	ttattgctta	aatgatgatg	atgaaactga	agtttttaaa	360
gaggatatta	ttcaagggtt	ccgctatgga	agtgatatag	ttcctttctc	taaagtggat	420
gaggaacaaa	tgaaatataa	atcggagggg	aagtgtctct	ctgttttggg	attttgtaaa	480
tcttctcagg	gtcagagaag	attcttcatg	ggaaatcaag	ttctaaaggc	tttgcccaa	540
gagatgatga	ggcag					555

<210> 381

<211> 406

<212> DNA

<213> Homo sapien

<400> 381

ctgcaccagg	tgggcctcta	ggtcccatta	agcccattgg	tccagggcca	agtccaactc	60
cttttccatc	atactgagca	gcaaagtcc	caccgagacc	aggggggcca	ggaggaccag	120
gtggaccagg	agggcctgtg	ggaccatctt	caccatctct	gcctgggggg	cctggtggac	180
ccctttctcc	acgtgggtct	ctatctccgg	ctgggccctt	tcttacagtt	tcctcttgta	240
aagattggca	tgttgctagg	cataaggtta	ctgcaagcag	caacaaagtc	cgcgtatcca	300
caaagctgag	catgtctagc	acttagacat	gcagactcct	tgtgtcgcag	agcccctggg	360
tcaccggcgg	aggatatcacc	tggcgggcgc	gggcatgcag	tcgtgg		406

<210> 382

<211> 528

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(528)

<223> n = A,T,C or G

<400> 382

```

ctgagcagtt tgtgggtntn tcttcccgca agtttcagga agtattcaca aaagaaaaat      60
acattttttc ccccaggggt ggggcaagga cagtggagag agtgctagga aatgagtcct      120
ctgggaaagg ggaccgggccc gtgatgttaa atatctccgg ctcccaagtg actggatttg      180
cctaggacct tcagaccaac agacttcaga ccctcagacc tgccccgggg ccagggtggag      240
aaagtgaggg ccgtacaagg aagtgaatt ctgagttgtt ggggctaagc ctgacccccct      300
ctccatgctc cccgccccaa cccactctgg cctcagtaga tttttttttc agttgtggtt      360
gttgcccagg ctggagtgcg gtagcgccat cttggctcac tgcacctcca ccttcggggc      420
tcaagcgatt ctccagcctc agcctcctga gtagctagga ctgcaggtgc tccaccacgc      480
ccggctaatt tttgtatttt tagtagagat ggggtttccc catgttgg      528

```

<210> 383

<211> 335

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(335)

<223> n = A,T,C or G

<400> 383

```

ccatnttgag tctactcctg cgtcttgtgc cctagcaccg cgagaaccgt cagtttgagc      60
cagatggaag ctgagctgaa cacattacga tggatgatgg aaacataaga ctatcaagaa      120
atccaagtgg taatgggcca agtttattca gcatccggca atggacttat cgtagttggg      180
gaaacgggtg ttccgaataa taccctggaa gttatcagga cacctatttt aaatataggc      240
ctgaattttg taaagtaata ttaaaggtgg tccgtgataa ttaaataaaa tgcttaattc      300
atgtggcgaa aaaaaaaaaa naaaaaaaaa aaaaaa      335

```

<210> 384

<211> 333

<212> DNA

<213> Homo sapien

<400> 384

```

agtccaatac ggctattggg gttgtagcag ctttcagagg aaattagtgg tctgggcttg      60
cctccagctc ccagggggca gccccagtag ctacactgtc cagacagcac aagaccaggc      120
tggtgtcacg tccatccgag cgctgcctca gggatcgata aagtttctact gcagaaagtc      180
tccactgcgg tatgctgaca tctgccctga accttcaccc tacagcatta caggctttaa      240
tcagattctg ctggaaagac acaggctgat ccacgtgacc tcttctgcct tcaactgggct      300
ggggtgatcc ttggtgcctt tgttccaca agg      333

```

<210> 385

<211> 343

<212> DNA

<213> Homo sapien

<400> 385

```

ctgtgacacc tcaggttgaa agggtcttcc tccttgaaca cccaccgagg ggcctggagc      60
aacagccagc cgatatggac ttctagctgc accgggtcac tgagggtgga gaggtttgtc      120
tggtgacact actctccact gtcgtcgact gtggcagcgt caatgaagta gctcgaggcc      180
tggtttgaga tgaggctctc attgtgaaac cactgtgtgg aattgtcctc aggggagtag      240
gtccctggc acttcagagt cacactgtcc ttctcgagca ccctgtacca ttgaggctcc      300
aggaacacca cagcctttgg gagatcttca gtcgcatgc caa      343

```

<210> 386

<211> 244
 <212> DNA
 <213> Homo sapien

<400> 386
 tattcttttga ttcttggcaa ataggtgaga gaactaatag caaccaggca actgaggacg 60
 aagtcaaaaa gtcggttaaca gaagaatgga atcagccaac ccacttgata agaaattgct 120
 ccataaacca gcattgaact gattataaac ataagaacag agacggcaaa aagaacacag 180
 gcattatcag ccattctctc agacgaatag taattaccga tgacttcata ctgaatgttg 240
 acag 244

<210> 387
 <211> 504
 <212> DNA
 <213> Homo sapien

<400> 387
 atctggagtc cagcctcagg gatgcgctac tttccattct ctgcattgaa cattcggttct 60
 gtcagcatcc gtcacagctt cactgcatca gcggcaaac tgccgatccc gtcagagagc 120
 ttctccacag ccattctggtc ctcggtgtgc aaccaacgga aagacttctc atccagggtg 180
 attttttcca ggtcactggc ttgggcccgc ttggctgaga gcacaggcac cagcttggcg 240
 ttgtcctgca gcagctctcc caggagcttg ggtgggatgg tgaggaagtc acagccggcc 300
 agtgctttga tctcgccgt gttgcggaag gaggcgcca tgacaatggt tttgtagcta 360
 aacttcttgt agtagttgta gatttttagtg acactcttta cccaggggtc ttccaggggc 420
 tcataggatt tcttgtcggg gtttgccaca tgccaatcaa ggatgcgccc aacaaatggg 480
 gagatgaggg tcacacccgc ctgc 504

<210> 388
 <211> 450
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(450)
 <223> n = A,T,C or G

<400> 388
 gccaaagtgc tgcntgaatt ccactccctt gggttttcgcc tgcccagcgt tgctggttgc 60
 gtggaggggtg gggggagctc agtggcaggg aatcagcggc ccgtgggggtc gtggggacgg 120
 gaacatgtgc ccgaccgctc catcccctcc tcctccttag gatgcataac ctaccttgct 180
 tttttttttt taaattttnt ttccagggtan agtagctntt tgtacataaa naatacttga 240
 aaaattaatt gtatgatgta tgaaaanaca nagtctccta gttttgtatn ttggtgtatg 300
 actgccatga gttccaccaa aaagccactn tattttgggtc tntgtgacat tttaaatgcg 360
 tgacaaaagt gagcaataaa agngaggaan aaatntatnt atganataat atanattgta 420
 ttgaaatcta aaaaaaaaaa aaaaaaaaaa 450

<210> 389
 <211> 297
 <212> DNA
 <213> Homo sapien

<400> 389
 cctgcacttg aacatggctt tggttttaag caacttctct accctgacct tcctcctggg 60
 acagcgtttc gggagggttc ttggcctcac tgagagggat gtggagctgc tgtaccccg 120

```

caaggagaag gtattctaca gcctgatgag ggagagcggc tacatgcaca tccagtgcac    180
caagcctgac accgtaggct ctgctctgaa tgactctcct gtgggtctgg ctgcctatat    240
tctagagaag ttttccacct ggaccaatac ggaattccga tacctggagg atggagg      297

```

```

<210> 390
<211> 223
<212> DNA
<213> Homo sapien

```

```

<400> 390
ctgggctgga gagttggtgc tggcaaaaca gtccttcccc tggggccggt tcttaccag    60
gtccagagaa accaacgcgg gatgtcagac ttcacaaaaa ggactttctg gttgccctg    120
gctggcttcc tggaggcggt cgctctagt ttctcaggga tggagcgaga gcccagccag    180
agaacagtaa gaggagctgc tctcctatct gcactcaccc agg                223

```

```

<210> 391
<211> 365
<212> DNA
<213> Homo sapien

```

```

<400> 391
ctgaggaaga aatgaaaaaa gaccctgtcc ctcatggccc gccactggc ctctgtgaa    60
ctctgtcctg ttgccaaacc cagatgaagt cagccaaaaa gtgctttcca cctcctctct    120
ctggggctgc ccagcctgac cgtaggggat ccactggcag agccaagggt gatgctggtg    180
cctgaagctg gaagccagca ggacatgaga cccctcctgt agcaggaagt ggttctagaa    240
ctcccagcag aacagaacgg aaaaggagct gattggggat agaatgagtt ctgctaaaca    300
gccagatgct ctgagagagg tgacactgga ctgtctcgga ggtgtgtgca gatggctaca    360
ggtgg                                           365

```

```

<210> 392
<211> 302
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(302)
<223> n = A,T,C or G

```

```

<400> 392
ccaagagcta caatgagcag cgcatacanga cagaacgtgc aggtttttga gttccagttg    60
actgcagagg acatgaaagc catagatggc ctagacagaa atctccacta ttttaacagt    120
gatagttttg ctagccaccc taattatcca tattcagatg aatattaaca tggagagctt    180
tgctgatgt ctaccagaag ccctgtgtgt ggatggtgac gcagaggacg tctctatgcc    240
ggtgactgga catatcacct ctacttaaat ccgtcctgtt tagcgacttc agtcaactac    300
ag                                           302

```

```

<210> 393
<211> 213
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(213)

```

<223> n = A,T,C or G

<400> 393

ccaataatca	agnacaaana	ctggatttga	ggatggatca	gttctgaaac	agtttctttc	60
tgaaacagag	aaaatgtccc	ctgaagacag	agcaaaatgc	tttggaaaga	atgaggccat	120
acaggcagcc	catgatgccg	tggcacagga	aggccaatgt	cgggtagatg	acaaggtgaa	180
tttccatttt	attctgttta	acaacgtgga	tgg			213

<210> 394

<211> 334

<212> DNA

<213> Homo sapien

<400> 394

cctacccata	atccagagag	gcttgcccag	aggaggacta	cgtggggggac	gtgccaccag	60
aaccctactt	gggggcgggg	tgtcactccg	aggtcaaaac	ctgctccgag	gtggacgagc	120
cgtagctccc	cgaatgggct	taagaagagg	tgggtgttcga	ggcctgtggag	gtcctggggag	180
agggggccta	gggcgtggag	ctatgggtcg	tggcggaatc	ggtaggtagag	gtcgggggtat	240
gatagggtcg	ggaagagggg	gctttggagg	ccgaggccga	ggccgtggac	gagggagagg	300
tgcccttgct	cgccctgtat	tgaccaagga	gcag			334

<210> 395

<211> 174

<212> DNA

<213> Homo sapien

<400> 395

ccagatgagg	aaaaaaatta	ggaaggagat	gaagttttcc	aaatttcatg	gtatatgctg	60
cacttcccca	accttcactc	tccatgtagc	ctactgggtc	tactattcca	caaagtggct	120
caacctccaa	atgacctctg	gtttaccctt	attaaaaatcc	caaaggactt	tcag	174

<210> 396

<211> 140

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(140)

<223> n = A,T,C or G

<400> 396

ctgcaaagcc	ttgtgtaacn	ttctccagca	tttggaccca	gtacgtgaaa	gcccacaaca	60
cgttcattgt	cttttagtatt	acagattatt	tttgcataac	atttgttggt	atctcttgac	120
ggaatcgctc	attccaatgg					140

<210> 397

<211> 318

<212> DNA

<213> Homo sapien

<400> 397

cctcgcttgg	agggtccccg	ggcagcacag	ggaggacgag	cttgtccagc	agagggtctg	60
gcagaggggtc	ccgcagaggt	ttgggcaggg	ggctctgacat	ccctggctcc	tgctctggct	120
ctggctgccc	ggattttgcac	aggcccaggt	gcatacagat	gccgtttgag	tcagctctgg	180

tctggaagta	gtcgaatgacc	agggggaagt	agtcgtcaag	cacttggttg	cactggggca	240
tgagcagctt	caaggggagg	acgttgcaact	cctgctccag	gaacttcctc	atcgtgtcct	300
ggaaaatggc	ctccttgg					318

<210> 398

<211> 517

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(517)

<223> n = A,T,C or G

<400> 398

ccttntctcg	ccatccattc	atcgaccctc	tccagcactt	gctgcaggct	tggtgacca	60
tccaccatgg	cttgaataat	cccggtgagc	tctgtacaga	atggggtaag	ctgtggatgg	120
actacaggct	ggacatacat	gtgaaaggta	gactcaatct	ccatgggtccg	gccatttagc	180
tttaggatgg	ggaactcgat	gatttcctga	ggatgaatct	gtggcttgtc	gcacgtggcc	240
tcaaagtcca	gactaaaaa	gtagtatac	ctctggagag	ggaaggacac	cattgccgcc	300
atggatgcgc	caaagccgtg	ggccgccagc	tttctggtgg	atatggagca	gaactccgga	360
acaccacagg	gagaaaataa	gtgggagccc	agcacttttc	ttgctcttga	aagtaaatac	420
gaagaaaatc	gagctgtctc	agtctgtaaa	ggtgctagca	ttgaacatcc	agaagcatct	480
aaaactctcc	ttacttcgaa	gatgccaaga	ccggcag			517

<210> 399

<211> 329

<212> DNA

<213> Homo sapien

<400> 399

ccaacctcag	gcaacgggtg	gagcagtttg	ccagggcctt	ccccatgcct	ggttttgatg	60
agcattgaag	gcacctggga	aatgaggccc	acagactcaa	agttactctc	cttcccccta	120
cctggggccag	tgaatataga	agcctttcta	ttttttggtg	cgggagggaa	gacctctcac	180
ttagggcaag	agccaggtat	agtctccctt	cccagaattt	gtaactgaga	agatcttttc	240
tttttccttt	tttcggtaac	aagacttaga	aggagggccc	aggcactttc	tgtttgaacc	300
cctgtcatga	tcacagtgtc	agagacgcg				329

<210> 400

<211> 451

<212> DNA

<213> Homo sapien

<400> 400

ctggcttcac	tgctcagggtg	attatcctga	accatccagg	ccaaataagc	gccggctatg	60
cccctgtatt	ggattgccac	acggctcaca	ttgcatgcaa	gtttgctgag	ctgaaggaaa	120
agattgatcg	ccgttctggt	aaaaagctgg	aagatggccc	taaattcttg	aagtctggtg	180
atgctgccat	tgttgatatg	gttcctggca	agcccatgtg	tgttgagagc	ttctcagact	240
atccaccttt	gggtcgcttt	gctgttcgtg	atatgagaca	gacagttgcg	gtgggtgtca	300
tcaaagcagt	ggacaagaag	ctgctggagc	tggcaaggte	accaagtctg	cccagaaagc	360
tcagaagcta	aatgaatatt	atccctaata	cctgccaccc	cactcttaat	cagtgggtgga	420
agaacggctc	agaactgttt	gtttcaattg	g			451

<210> 401

<211> 180

<212> DNA

<213> Homo sapien

<400> 401

ccaggaagca	ggccaggga	ttggcagcac	tgcccagcac	cacagccagg	tggtaggcca	60
gacgcccgt	gggtaagcag	gaaaagctct	gcacggcagg	cagcacgcca	ttggtcagcg	120
cggtgggtggc	ggccaacagg	cccagcaggc	aggcactgcg	ggctgataga	agctgatagg	180

<210> 402

<211> 385

<212> DNA

<213> Homo sapien

<400> 402

ccaggccacc	tgtgcggggc	tcctcgatgt	ggaagggttcg	ggtgaggaga	ttgtagaagg	60
agccgtagca	cacggccacc	acagtgcacg	tgaggcagat	cacgttgtag	ggcatgctga	120
agtccggtgt	cggcagggtc	accagcagcg	gctccgtgta	gagccgcaca	aagtagttag	180
agccatcaga	gactgggaac	aggctgttga	agaggggact	ctcttcccag	tccactggct	240
tggtgctac	catgctgggc	acaagggcgc	tgaggacaga	tgggctgaca	tagaagccat	300
ggttaggatc	tggcgtgtac	tcggtccact	tcagcagcgc	ccgctcaaac	tggatggaaa	360
ccttgggtgac	tgagttggcc	ggcag				385

<210> 403

<211> 440

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(440)

<223> n = A,T,C or G

<400> 403

ctgtttaacc	agnaacccgg	ggggtcaccc	cccacagaat	gtacatgaaa	cactagagga	60
ctgcatgttt	ttccctgaga	gaagcgtaag	acaaacagaa	gtcaaaaagt	agtcactggg	120
agcgccatcc	ttctaagcaa	atcctccctt	tcccttttgg	aggatttgcc	cgaactacgt	180
agccagtcag	cacttagacc	acctgcctcc	tccccccct	ataaaccac	cactccccctc	240
ctcctttccc	aaaccacttg	gggtgtccta	agccctcact	gccccaaagg	caaaatatca	300
gctaagatcc	ttgtcagtat	ttccacagtc	atacctaata	aattgggaag	tggggcccct	360
aaaaaccaat	tcacatctat	gcacttggtt	ccactggatt	tggcagacag	gcttttttag	420
ttaccgtaac	cagatcttaa					440

<210> 404

<211> 239

<212> DNA

<213> Homo sapien

<400> 404

cctacgaaaa	actccccggc	ggtgaagaga	acgtcagtcg	catccagcgt	cgcgttctcg	60
tctcctat	ccacaattcg	gagccccagg	tcttgagggg	ctttgaggac	tccatcgacc	120
tctggcctac	gagcggggct	ccaggggcgc	gtgattaggg	ccgtgtcccc	ttggatcacg	180
gccgtgtcgc	caagcagcgg	tcccagcggc	aatgactcct	caggtggcag	ttctagcag	239

<210> 405

<211> 261

<212> DNA

<213> Homo sapien

<400> 405

ctggagaggc	agcccttcac	cggatgcccc	gctccgtgcc	cctgcggggc	ccagcacagt	60
ttaccttctc	cccccaeggc	ggtcccatct	actctgtgag	ctgttcccc	ttccacagga	120
atctcttctc	gagcgctggg	actgacgggc	atgtccacct	gtactccatg	ctgcaggccc	180
ctcccttgac	ttcgtgacg	ctctccctca	agtatctgtt	tgctgtgcgc	tggtccccag	240
tgcgccctt	ggtttttgca	g				261

<210> 406

<211> 641

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(641)

<223> n = A,T,C or G

<400> 406

ctgctcccg	gcntgggtggc	agcaagtaga	catcgggcct	gtgcagggcc	accccttgg	60
gccgggagat	ggtctgcttc	agtggcgagg	gcaggtctgt	gtgggtcacg	gtgcacgtga	120
acctctcccc	ggaattccag	tcacctctgc	agatgctggc	ctcaccacg	gcgctgaaag	180
tggcattggg	gtggctctcg	gagatgttgg	tgtgggtttt	cacagcttcg	ccattctggc	240
gggtccagga	gatggtcacg	ctgtcatagg	tggtcaggtc	tgtgaccagg	caggccaact	300
tggtggactt	ggtgaggaag	atgctggcaa	aggatggggg	gatggcgaa	acccggatgg	360
ctgtgtcttg	atcggggaca	cacatggagg	acgcattctg	ctggaaggtc	aggccccctgt	420
gatccacgcg	gcaggtgaac	atgctctggc	tgagccagtc	gctctctttg	atggtcagtg	480
tgctggtcac	cttgtaggtc	gtgggcccag	actctttggc	ctcagcctgc	acctgggccg	540
tggtgacgcc	agaccccacc	tgcttcccct	cgcgcagcca	ggacacctga	atctgccggg	600
gactgaaacc	cgtggcctgg	cagatgagct	tggacttgcg	g		641

<210> 407

<211> 173

<212> DNA

<213> Homo sapien

<400> 407

ccagggtactg	gcacaatcat	gtctggatgg	gggtgggtgg	gtcctgtagg	cagagaaaca	60
ggaaattgtc	gtagtcagta	tcgagcagcg	tggcctcggt	cgccaccgta	tagttgatct	120
tgaacttctt	tggattctca	gtcttctctc	caaggacctt	cttctcaaca	cag	173

<210> 408

<211> 165

<212> DNA

<213> Homo sapien

<400> 408

ccactgtctg	cagccatggc	agaaaagtgt	caaagtccag	caccttcaca	ttcatctcat	60
cactcttggg	gttccccagg	accttgagca	cctcggcggt	ggtagggttc	tggcccaggg	120
ccctcatcac	atccccacac	tggctgtaca	ggatcttgcc	atcac		165

<210> 409

<211> 329

<212> DNA

<213> Homo sapien

<400> 409

ctgtagcttc	tgtgggactt	ccactgctca	ggcgtcaggc	tcagatagct	gctggccgcg	60
tacttgttgt	tgctttgttt	ggagggtgtg	gtggtctcca	ctcccgctt	gacggggctg	120
ctatctgcct	tccagggcac	tgtcacggct	cccgggtaga	agtcacctat	gagacacacc	180
agtgtggcct	tgttggcttg	aagctcctca	gaggaggcg	ggaacagagt	gaccgagggg	240
gcagccttgg	gctgaccaag	gacggtcagc	ttggtccctc	cgccaaatac	cgccggataa	300
gcaccactgt	tgtctgctga	ttgacagaa				329

<210> 410

<211> 235

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(235)

<223> n = A,T,C or G

<400> 410

ccatcagnga	gaaagggtgtt	tgtcagttgt	ttcacaaacc	agattgagga	ggacaaaactg	60
ctctgccaat	ttctggattt	ctttattttc	agcaaacact	ttctttaaag	cttgactgtg	120
tgggcactca	tccaagtgat	gaataatcat	caagggtttg	ttgcttgtct	tggatttata	180
tagagctttt	tcatatgtct	gagtcagat	gagttggtca	ccccaacctc	tggag	235

<210> 411

<211> 294

<212> DNA

<213> Homo sapien

<400> 411

aattaaggga	agatgaagat	gataaaacag	ttttggatct	tgctgtgggt	ttgtttgaaa	60
cagcaacgct	tcggtcaggg	tatcttttac	cagacactaa	agcatatgga	gatagaatag	120
aaagaatgct	tcgcctcagt	ttgaacattg	accctgatgc	aaagggtggaa	gaagagcctg	180
aagaagaacc	tgaagagaca	gcagaagaca	caacagaaga	cacagagcaa	gacgaagatg	240
aagaaatgga	tgtgggaaca	gatgaagaag	aagaaacagc	aaaggaatct	acag	294

<210> 412

<211> 433

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(433)

<223> n = A,T,C or G

<400> 412

cctgagaagc	cagaggcagg	tggagagggg	gtggaaagtg	agcagcgggc	tgggctggag	60
ccgcacacgc	tctcctccca	tgtaaataag	cacctttaga	aaaattcaca	agtccccatc	120
cacaaaaaaa	aaaanaanaa	aaatttcagg	gantaaaaat	anactttgaa	caaaaaggaa	180
catttgntgg	cctggggggg	catctnantt	tntntagcnc	cagngattcc	ctcccnccc	240
cacccatcac	atanatgtaa	caccttggt	ntaaaatggg	gagccgtttc	cacntgccc	300

```

ccntccccgc ccccaggcag ttgccccggn gacacntcaa gacaggancg aggtagtntt 360
tcancancac agttncacaa ggaacagaac agtntctccc gccagccct gcggcacaag 420
ggattgacac gcn 433

```

<210> 413

<211> 494

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (494)

<223> n = A,T,C or G

<400> 413

```

ccttatttct cttgtcnctt cgtacaggga ggaatttgaa gtagatagaa accgacctgg 60
attactccgg tctgaactca gatcacgtag gactttaatc gttgaacaaa cgaaccttta 120
atagcggctg caccatcggg atgtcctgat ccaacatcga ggtcgtaaac cctattgttg 180
atatggactc tagaatagga ttgcgctgtt atccctaggg taacttggtc cgttggtcaa 240
gttattggat caattgagta tagtagttcg ctttgactgg tgaagtctta gcatgtactg 300
ctcggagggt gggttctgct ccgaggtcgc cccaaccgaa atttttaatg caggtttggg 360
agtttaggac ctgtgggttt gttaggtagt gtttgcatga ataaattaaa gctccatagg 420
gtcttctcgt cttgtgtgtt tatgcccgcc tcttcacggg cagggtcaatt tcaactggta 480
aaagtaagag acag 494

```

<210> 414

<211> 294

<212> DNA

<213> Homo sapien

<400> 414

```

ctgggcgcat agcaccgggc atattttgga atggatgagg tctggcaccc tgagcagtc 60
agcaggagct tggctctagt tgagcaattt ggctaggagg atagtatgca gcacgggtct 120
gagtctgtgg gatagctgcc atgaagtaac ctgaaggagg tgctggctgg taggggttga 180
ttacagggtt ggaacagct cgtacacctg ccattctctg catatactgg ttagtgaggt 240
gagcctggcg ctcttctttg cgctgagcta aagctacata caatggcctt gtgg 294

```

<210> 415

<211> 421

<212> DNA

<213> Homo sapien

<400> 415

```

ccttgccct gccctccac gaatgggttaa tatatatgta gatatatatt ttagcagtga 60
cattcccaga gagccccaga gctctcaagc tcctttctgt caggggtggg ggttcagcct 120
gtcctgtcac ctctgaggtg cctgctggca tcctctccc catgcttact aatacatcc 180
cttccccata gccatcaaaa ctggaccaac tggcctcttc ctttcccctg ggacaaaat 240
ttaggggctt cagtccctca ccgccatgcc ctggcctatt ctgtctctcc ttcttcccc 300
tggcctgttc tgtctctgag ctctgtgtcc tccgttcatt ccatggctgg gagtcaactga 360
tgctgcctct gccttctgat gctggactgg ccttgcttct acaagtatgc ttctcccaca 420
g 421

```

<210> 416

<211> 342

<212> DNA

140

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(342)

<223> n = A,T,C or G

<400> 416

ccactttctt	tcccacnctg	gaaggcggca	tctatgactt	cattggggag	ttcatgaagg	60
ccagcgtgga	tgtggcagac	ctgataggtc	taaaccttgt	catgtcccgg	aatgccggca	120
agggagagta	caagatcatg	gttgctgccc	tgggctgggc	cactgctgag	cttattatgt	180
cccgtgcac	tcccctatgg	gtcggagccc	ggggcattga	gtttgactgg	aagtacatcc	240
agatgagcat	agactccaac	atcagtctgg	tccattacat	cgtcgcgtct	gtcaggtct	300
ggatgataac	acgctatgat	ctgtaccaca	ccttccggcc	gg		342

<210> 417

<211> 389

<212> DNA

<213> Homo sapien

<400> 417

tattaattag	gttcttaaga	catttagaac	accaatttgt	gaggataaat	tccattcgtc	60
agagcaaaca	cagatcgcag	gtagccctgg	agctgaggaa	tagctttgat	ttttggtaaa	120
atttgtgagt	ccacagcttt	ctgatcaatc	ttgcgtgct	ccgtaatctc	atatttctct	180
ttttctgtgt	cgaagatctc	accttcctgg	tgtctgggct	tccgcagctt	cttcttcttg	240
aagtaagcat	cagtaagatg	ttttgggatt	tttacattgc	tgatatcgat	tttggttgaa	300
gtggcaatga	caaatttctg	gtgtgttctt	cgtagaggaa	ctcgattgag	gaccagaggt	360
ccagtcacaa	gtaataagcc	actagccag				389

<210> 418

<211> 343

<212> DNA

<213> Homo sapien

<400> 418

gtgggagggg	gccagggttg	gatggaggga	gtttacagga	agcagacagg	gccaacgctg	60
aagccgaatt	cctggtcttg	ggcaccaacg	tccaaggggg	ccacatcgat	gatgggcagg	120
cgggaggtct	tggtggtttt	gtattcaatc	actgtcttgc	cccaggctcc	ggtgtgactc	180
gtgcagccat	cgacagtgc	gctgtagggt	aagcggctgt	tgccctcggc	gcggatctcg	240
atctcgtttg	agccctggag	gagcagggcc	ttcttgaggt	tgccagtctg	ctggtccatg	300
taggccacgc	tgtttttgca	gtggtagggt	atgttctggg	agg		343

<210> 419

<211> 255

<212> DNA

<213> Homo sapien

<400> 419

cctagcaaga	gaatcaccaa	atztatggag	agttaacagg	ggtttaacag	gaaggaagtg	60
ccttttagtaa	gttctcaagc	cagaggctgg	aggcagcagc	taaatacagag	gacagcatcc	120
tcagtgaag	tgagccattc	ggggtggcat	gtcactccag	gaataaacac	aacttagaaa	180
caaagtattt	cgtaggatag	cacagtgcac	tggtgcactg	tgaacctgag	gccactgtgt	240
caaactgtgc	actgg					255

<210> 420

<211> 261
 <212> DNA
 <213> Homo sapien

<400> 420
 cttctgatga taaccaaccc ctagctacca ctctgtattc atcaggggag ggggtataaac 60
 cccacatgca agaagaaccc ttgccccag tgtcaaatgg gatggggatg ctagagttat 120
 agtaaagggg aaaccctatg taagctgtta acagagtcca caggggtagg gataaccct 180
 gttctccagc tcccaaatgt gtcactttc ccagcttctt catccgttca tcaatgctgg 240
 caaagttccc ctcaactgtg g 261

<210> 421
 <211> 179
 <212> DNA
 <213> Homo sapien

<400> 421
 ccttctgtgt gttgtttcaa atgctgcttg atttctcgta acagatctgc atctatgtaa 60
 tacctttctt cagatctgac tgctccaaaa tgattctgca tcctgatttg agacatcaat 120
 tcatttagtc ggccttgaa ctgagtaggt gcatttagtt caccctgaat cgtatccag 179

<210> 422
 <211> 424
 <212> DNA
 <213> Homo sapien

<400> 422
 cgaggtccaa atctgatctg cagatgcaga agattcgaca gaagctgcag actaaacagg 60
 ctgccatgga gaggtctgga aaagctaagc aactgcgagc acttaggaaa tacgggaaga 120
 aggtgcaaac ggaggttctt cagaagaggc agcaggagaa agcccatatg atgaatgcta 180
 ttaagaaata tcagaaaggc ttctctgata aactggattt ccttgaggga gatcagaaac 240
 ctctggcaca gcacaagaag gcaggagcca aaggccagca gatgagggaag gggcccagtg 300
 ctaaacgacg gtataaaaac cagaagtttg gttttggtgg aaagaagaaa ggctcaaagt 360
 ggaacactcg ggagagctat gatgatgtat ctagcttccg ggccaagaca gctcatggca 420
 gagg 424

<210> 423
 <211> 256
 <212> DNA
 <213> Homo sapien

<400> 423
 ctgtggccta gggctacctc aagactcacc tcatccttac cgcacattta aggcgccatt 60
 gcttttggga gactggaaaa ggggaaggta ctgaaggctg tcaggattct tcaaggagaa 120
 tgaatactgg gaatcaagac aagactatac cttatccata ggcgcagggtg cacaggggga 180
 ggccataaag atcaaacatg catggatggg tcctcacgca gacacacca cagaaggaca 240
 ctagcctgtg cacgcg 256

<210> 424
 <211> 330
 <212> DNA
 <213> Homo sapien

<400> 424
 ccagccgcat gggagtggag gcagtcacg ccttgctaga ggccaccccg gacacccag 60

142

```

cttgcgctcgt gtcactgaac gggaaccacg ccgtgcgccct gccgctgatg gagtgcgtgc      120
agatgactca ggatgtgcag aaggcgatgg acgagaggag atttcaagat gcggttcgac      180
tccgagggag gagctttgcg ggcaacctga acacctacaa gcgacttgcc atcaagctgc      240
cggatgatca gatcccaaag accaattgca acgtagctgt catcaacgtg ggggcacccg      300
cggctgggat gaacgcggcc gtacgctcag      330

```

<210> 425

<211> 333

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(333)

<223> n = A,T,C or G

<400> 425

```

ctgctccatg gntctaaagt cagcaccacc cacaccacaca atgatcactg acatgggcag      60
gttcgaggca cgcaccacag cctcacgtgt ggcttcacaca tccgtcacag caccatcagt      120
cagnagaaac agnatgaagt attgngaggc antccctga tgtgcagcct gggctgcaaa      180
cctggacctg cccgggcggc cgctcgaaag ggcgaattcc agcacactgg cggccggttac      240
tagnggatnc aganctcggg acnaagcttg gcagtaatca tggatcatagc tgtttcctgt      300
gagcggntgg gatgaacgcg gccgtacgct cat      333

```

<210> 426

<211> 411

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(411)

<223> n = A,T,C or G

<400> 426

```

gggtgttcat catgaggatt gcttctgccca tggagctgat ggacgtgggc aggttgctga      60
gaaggtgggg tggaaagtga tgccgggggt ggggtgagtgc cctgggtcttg ttcatagggg      120
agcctttccc tagcagtgga acgctgtggt cattttctct agcatattcc cttgggaagt      180
ctagatttgc tattaatctg gctgagaatc taagttctgt gccttagaga cagtttgcac      240
tttcccatat tgtgcctggg acagccatat gatttttttt cccaccaaac aagtatgcaa      300
acagaaacca gttcaaaggg ggatggtgta aaagatgagg cagtanaaat gcctttgaat      360
ggttttctgt agctaattct ctttaaatat tgtcctgctt tttttcttta t      411

```

<210> 427

<211> 450

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(450)

<223> n = A,T,C or G

<400> 427

```

acgtgtacaa gtttgaactg gatacctctg aaagaaagat tgaatttgac tctgcctctg      60

```

143

```

gcacctacac tctctactta atcattggag atgccacttt gaagaacca atcctctgga 120
atgtggctga tgtggncatc aagttccctg aggaagaagc tccctcgact gtcttgtccc 180
agaacctttt cactccaaaa caggaaattc agcacctgtt ccgcgagcct gagaagaggc 240
ccccaccgt ggtgtccaat acattcactg ccctgatcct ctgcgcgttg cttctgctct 300
tcgctctgtg gatccggatt ggtgccaatg tctccaactt cacttttgct cctagcacga 360
ttatatttca cctgggacat gctgctatgc tgggactcat gtatgtctac tggactcagc 420
tcaacatgtt ccagaccttg aagtacctgg 450

```

<210> 428

<211> 377

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(377)

<223> n = A,T,C or G

<400> 428

```

cagggtctata gtgcgctatg ttgatctggt gttcatgcta agttccgcat caatatgggtg 60
acttcttggg agtgggggac caccaggttg cctaaggagg ggtgaacctg cctacgttgg 120
aaatagagct ggncaaaaact cctgtgctca tcagtagtag aattgcacct gtgaatagcc 180
nccgcctcc agcatgggca acataacaag accctgcctc ttaaagataa aaattggaaa 240
acactngtag gaaaaaaagg gtgnttggtc taaataaatn tggattgggn ataatgacn 300
caaaactatc atgaatttga aagcntttct aatttcttga aagtctgaaa aaagttaaan 360
cncaatttta tctnaaa 377

```

<210> 429

<211> 206

<212> DNA

<213> Homo sapien

<400> 429

```

gttgctcctc caaagaagg tggcttcaag gccgtgtcca gggacccacg agcagaggca 60
ctggggggca agggatctcc aagggggcaa gggatcccta aagggggtag ctacaggtg 120
aggggggtta gggccctct agggagcgcc tgaggccata cattcaagag tgcctctggt 180
gaggcccagg gaagagccag gactgg 206

```

<210> 430

<211> 473

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(473)

<223> n = A,T,C or G

<400> 430

```

ccttatttnt cttgtccttt cgtacaggga ggaatttgaa gtagatagaa accgacctgg 60
attactccgg tctgaactca gatcacgtag gactttaatc gttgaacaaa cgaaccttta 120
atagcggctg caccatcggg atgtcctgat ccaacatcga ggtcgtaaac cctattgttg 180
atatggactc tagaatagga ttgcgctgtt atccctaggg taacttggtc cgttgggtcaa 240
gttattggat caattgagta tagtagttcg ctttgactgg tgaagtctta gcatgtactg 300
ctcggagggtt gggttctgct ccgaggtcnc cccanccgaa atttttaatg cagggttggt 360

```

144

```

agntnaggac ctgtggggttt gttagggtact ggggtgcatta ataaattaaa gctccatagg      420
gtcttctcgt cttgctgtgt tatgcccnc tcttcacggg cagggtcaatt tca                473

```

<210> 431

<211> 215

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (215)

<223> n = A,T,C or G

<400> 431

```

cctgtatnaa gctanaaaaa gactaccagc ccgggatcac cttcatcgtg gtgcagaaga      60
ggcaccacac ccgggtcttc tgcactgaca agaacgagcg gggtgggaaa agtggaaaca     120
ttccagcagg cacgactgtg gacacgaaaa tcacccaccc caccgagttc gacttctacc     180
tgtgtagtca cgctggcatc caggggacaa gcagg                                215

```

<210> 432

<211> 391

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (391)

<223> n = A,T,C or G

<400> 432

```

ccagcactgc cacaaacttt ttcaggggcca ccaggcgctg cccttccagg accgggaacc      60
tgcccacttc tatccgcagg atgtagtgcg gtgcagattc caggtcagcc atgtagatcc     120
tgagagcgtc tgccaatttc caaacagtgg gagctatctt gttagcagtg gttgggtgcaa     180
ctgtgggtctg ggcagcctcc ctggtgagcc cagagagctt ctgcaggtaa gcggtataga     240
aggacctgga ttccatgagc acgggggactc gggagacgga gccattccgg aacagcaggt     300
agcaagaggg gaagtcggtg acaccaaact ttctcaccac attggcctct gtgttcagca     360
ccctgcgcac cgccacncct ttgtgctggg a                                391

```

<210> 433

<211> 420

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (420)

<223> n = A,T,C or G

<400> 433

```

ctgtagcttc tgtgggactt ccactgctca ggcgtcaggc tcagatagct gctgggtgcg      60
tacttggtgt tgctttgttt ggagggtgtg gtggtctcca ctcccgctt gacggggctg     120
ctatctgcct tccaggccac tgtcacggct cccgggtaga agtcacttat gagacacacc     180
agtgtggcct tggtggcttg aagctcctca gaggagggcg ggaacagagt gaccgagggg     240
gcagccttgg gctgacgtag gacggttagt ttggnccctc cgccgaatgc cgcanttcta     300
ctgtcccaca cctgacagta atagtcanc tcatcttcgg cttgggctct gctgatggtc     360

```


agggtggccc gtgntccccc agttggagcc agggaatcnc tcagggatcc canagggccn 420

<210> 434

<211> 239

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(239)

<223> n = A,T,C or G

<400> 434

ccaaccanga	gagaagggat	cgcttggtgc	ccagggccca	ccaggagctc	caggccact	60
tgggattgct	gggatcactg	gagcacgggg	tcttgcaagg	ccaccaggca	tgccaggctc	120
taggggaagc	cctggccctc	agggtgtcaa	gggtgaaagt	gggaaaccag	gagctaacgg	180
tctcagtggg	gaacgtggnc	cccctggacc	ccagggtctt	cctgggtctgg	ctggtncag	239

<210> 435

<211> 415

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(415)

<223> n = A,T,C or G

<400> 435

ctgtccaatg	gcaacaggac	cctcactcta	ttcaatgtca	caagaaatga	cgcaagagcc	60
tatgtatgtg	gaatccanaa	ctcagtgagt	gcaaaccgca	gtgaccagct	caccctggat	120
gtcctctatg	ggccggacac	ccccatcatt	tcccccccag	actcgtctta	cctttcggga	180
gcaaacctca	acctctcctg	ccactcgccc	tctaaccat	ccccncanta	ttcttgccgt	240
atcaatggga	taccgcagca	acacacacaa	gttctnttta	tcgccaaaat	cacgccaaat	300
aataacggga	cctatgcctg	tttagggntn	taacttggn	actggccgca	anaattccat	360
agtcaagagc	atcacagnct	ctgcatntgg	aacttctcct	ggctntcaga	cctgn	415

<210> 436

<211> 152

<212> DNA

<213> Homo sapien

<400> 436

ccaggattga	caggccatcc	attcacagcc	aggagatgct	gggccagctc	ctccaagagg	60
tctccgtcat	ggcagtgatg	aaaacctaac	agggtggccc	cctgtgccag	ctcagggtgac	120
tggagcccga	gggcctgaca	ggttcccagc	ag			152

<210> 437

<211> 174

<212> DNA

<213> Homo sapien

<400> 437

ccaggtagtg	gcacatcatg	ctctggatgg	gggtgggtgg	gtcctgtaag	cagagaaaca	60
ggaaattgtc	gtagtcagta	tcgagcagct	gtggcctcgt	tcgccaccgt	atagttgatc	120

ttgaacttct ttggattctc agtcttctct ccaaggacct tcttctcaac acag 174

<210> 438

<211> 485

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(485)

<223> n = A,T,C or G

<400> 438

ccacggccct	ctcggccctc	tcgctgggag	cggagcagcg	aacagaatcc	atcattcacc	60
gggctctcta	ctatgacttg	atcagcagcc	cagacatcca	tggtacctat	aaggagctcc	120
ttgacacggt	caccgcccc	cagaagaacc	tcaagagtgc	ctcccggatc	gtctttgaga	180
agaagctgcg	cataaaatcc	agctttgtgg	cacctctgga	aaagtcatat	gggaccaggc	240
ccagagtcct	gacgggcaac	cctcgcttgg	acctgcaaga	gatcaacaac	tggggtgcagg	300
cgcagatgaa	aggggaagctc	gccnggtcca	caaaggaaat	tcccgatgag	atcagcattc	360
tccttctcgg	ngtggcgcac	ttcaaggggc	agnnggtaac	aaagtttgac	tncagaaang	420
acttccctcg	aggatttcta	cttggatgaa	gagaggaccg	tgagggtccc	catgatgtcg	480
gaccc						485

<210> 439

<211> 317

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(317)

<223> n = A,T,C or G

<400> 439

gggccgtctt	cccctccatc	gtggggcgcc	ccaggcacca	gggcagtgat	ggtgggcatg	60
ggtcagaagg	attcctatgt	gggcgacgag	gccagagca	agagaggcat	cctcaccttg	120
aagtacccca	tcgagcacgg	catcgncacc	aactgggacg	acatggagaa	aatctggcac	180
cacaccttct	acaatgagct	gcgtgtggct	cccgaggagc	accccggtgct	gctgaccgag	240
gccccctga	accccaaggc	caaccgcnag	aagatgaccc	agatcatggt	tgagaccttc	300
agcaccacag	ccatgta					317

<210> 440

<211> 338

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(338)

<223> n = A,T,C or G

<400> 440

ccanaaagac	ttcccaggga	agatgcttgg	ctctctgctc	caaggtgggc	catggtatag	60
ggccctcgaa	gggcttgtgg	ctgggggtgat	cccagggggc	attgctcaaa	gtgcacagga	120
ggtggcagca	gggtcaggcg	agttcctggt	ccagggacat	caggagggag	ggtagaagcc	180

tagggagtgt	gcgaggctgc	tgggatgagg	gagctcaggg	gctaccagct	aaccagcctc	240
agctcaatgg	tttctccatc	cttgggtctg	tagtcagcaa	taccttgcaa	cagtgggggtg	300
ttgggggtctc	ggagaagctg	ccagaactcc	ctttctcc			338

<210> 441
 <211> 505
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(505)
 <223> n = A,T,C or G

<400> 441						
ccacacagan	tcaccaagcc	acagacttgt	cttccacaag	cacgttctta	tcttagccac	60
gaagtgacca	agccacacgt	actaaaggtt	gaactcaaa	atatgtacag	ggtattaaac	120
aaataccaag	gggaacagtt	aacttcaata	caaggtcgaa	atcagcaaca	agttctacaa	180
tccagnctg	atatcagata	caagcttcaa	ggacaatttc	ttttcgaagg	cttattccag	240
tttcgngagg	ctagcatgag	gtgtgtgcat	ttgccagggg	caaatttcta	ttctcaatta	300
acccatgcag	caaatgctac	ncatggtgcn	gagtcctgtt	agaagcattt	gcggtggacg	360
atggaggggc	ccgactcgtc	ttactcctgc	ttgctaatac	acnngngctg	gaaggnggac	420
agtgaggcca	cggatggagc	caccnatcca	caccgagtn	ttgcgctctg	ggggtgcgat	480
natnttgatc	ttcatggtgc	tgggc				505

<210> 442
 <211> 386
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(386)
 <223> n = A,T,C or G

<400> 442						
cgccagggtga	tacctccgcc	ggtgacccag	gggctctg	acacaaggag	tctgcatgtc	60
taagtgttag	acatgtctag	ctttgtggat	acgaggactt	tggtgtgct	tgcagtaacc	120
ttatgcctag	caacatgcc	atctttacaa	gaggaaaccg	taagaaagg	cccagccgga	180
gatagaggac	cacgtggaga	aaggggtcca	ccaggcccc	caggcagaga	tggtgaagat	240
ggccccacag	gccctcctgg	tccacctggt	cctcctggcc	cccctggtct	cgatgggaac	300
tttgctgtc	agtatgatgg	aaaaggaggg	nggacttggc	cctggacca	tgggcttaac	360
gggacctana	ggccccctg	gtgcag				386

<210> 443
 <211> 404
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(404)
 <223> n = A,T,C or G

<400> 443

```

cctccctctc agagcttgcc ccagggactc tctggccctc agggttcaat gtattctgac      60
caaggccaag ctttcctggg gctcaggga aatcacactt tgctaccga agctgtatcc      120
cctcagatgc caggaaggcc gtgatcatct gactccaccc tcctgagaca cattctctcc      180
ctgactgtcc tgttctaagt cagcggagca ccttaggatg gaggggtgga ggcgaggcca      240
ngatgcagcc tctgtgaaca ggtgcctgga ggctgggaaa tgaccctgag agggcaggac      300
acagcnaccg ngggcttaag gtgagggngg agagcaagnt tggcccactt tacaattcta      360
gntcagagcc ancccctaac atggnnggca tttattcatt tcgg                      404

```

<210> 444

<211> 318

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(318)

<223> n = A,T,C or G

<400> 444

```

catgggctat agtgcgctat gttgatctgg tgttcattgct aagttccgca tcaatatngc      60
gacttcttng gagtggggga ccaccangtt gcctaaggag gggggaacct gcctacgttg      120
gaaatagagc tgggtcaaac tcctgtgctc atcagtagta gaattgcacc tgtgaatagc      180
caccgccctc cagcntgggc aacatagcaa gaccctgcct cttaagataa aaattggaaa      240
acactggtan gaaaaaaagg ctgtttgggtc taaanaagtc tggatngggg ataaatgaca      300
cnaanctatc atgactnt                      318

```

<210> 445

<211> 418

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(418)

<223> n = A,T,C or G

<400> 445

```

ccagtccaac ctgctcctca ttattgtata aatgagcaga atcaatatgg cggaagccag      60
cttcaattgc caatttgggt gctctctaaag ctttactttt aggaacctct gcaggcgcat      120
aggtgccaaa tcccaggaca ggcataaggt gaccatcatt cagcttcaca cactgatatt      180
tcgaatccat ttctgtcact agcctggctg gcaaatgttt ctttcttcct ccctcacagg      240
ctataagagc aatgagctgg caacgcccct gagcacactg tctgctgntt aaccaatggc      300
atgtgagagg agggacagag gcagtcttac acaagctgtg ataaaaattg catncagttc      360
aaccagtttc ttacnttatt ctaatgnnga ggaagtgtgn gaagagcaca aagtcaga      418

```

<210> 446

<211> 361

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(361)

<223> n = A,T,C or G

<400> 446
 ctgtccaatn acaacaggac cctcactcta ctcagtgtca caaggaatga tgtaggaccc 60
 tatgagtgtg gaatccanaa cgaattaant gttgaccaca gcgacccagt catcctgaat 120
 gtccctctatg gccagacga cccacacntt tccccctcat acacctatta ccgtccaggg 180
 gtgaacctca gntctcctg ncatgcagcc tctaaccacac ctgcacagta tccttggtg 240
 attgatggga acntccagna acacnacaca agagctcttt atctccancn tnactganaa 300
 gaacagcgcg actctatncc ttccaggggg ggggggtggg gnntgnggac cttncggggc 360
 c 361

<210> 447
 <211> 321
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(321)
 <223> n = A,T,C or G

<400> 447
 ccagganant ggttccccaa aggggacctc acccgccccg agctctggag ccgctgacgc 60
 tcgcatccag gacatttgag atgggaatcc aaataggcta cttgnaaaag acgtgctgca 120
 ngcagccctg gagagactca tggagttcat tgtacattac tccatctacc gaggcagcgc 180
 atggcatgac tnaacggctt gnaacaaaca canaaattac caccacaaac attcaggaac 240
 caaatataat ctgctatggt cacaccacag acaatgcagg aagaggcttt ttattgctng 300
 ngtgngtttt caaatcatgt t 321

<210> 448
 <211> 325
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(325)
 <223> n = A,T,C or G

<400> 448
 ccagcttcaa ctttttagta tagaagatac aggatcacia aaaggagact acgctttgca 60
 aacatagcat caaaattcaa cttttctctt tgcagtttat ccatggngtc agcatacctt 120
 gcaagggaag ctacttacat caaataactt ttctatatac atttcctcat tgaccttttc 180
 tcaaagaata tcttggtttt gccgaacaaa cataatatag gngtctgcca gatccattcc 240
 tggtttctgt ngtgaaggaa aagcaggggg aacaaaataa tatcagggtc tcaatngtga 300
 nattattatt taatcatacc ctgan 325

<210> 449
 <211> 123
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(123)
 <223> n = A,T,C or G

150

<400> 449

cattaatntt	ggaagcgatg	gtgtggatta	catcagtgtt	agggcatggt	gtggatatta	60
ttacattann	attggaagcg	atggtgtgga	ttacatcagt	gatagggcac	ggtgtggata	120
tta						123

<210> 450

<211> 328

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(328)

<223> n = A,T,C or G

<400> 450

ctggcaattt	tgagctgccg	gttatacacc	aaaatgttct	gttcagtacc	tagctctgct	60
cttttatatt	gctttaaatt	tttaaagaaa	ttatattgca	tggatgtggt	tatttgtgca	120
tattttttta	caatgcccaa	tctgtatgaa	taatgtaaac	ttcgattttt	ttttaaaaaa	180
attagatttt	agctggagct	tttgactaat	gtaaagtaaa	tgccaaacta	ccgacttgat	240
ngggatgttt	ttgtaangtt	aattttctaa	gactttttca	catccaaagt	gatgctttgc	300
tttgggtttt	aactgtttca	acntnggn				328

<210> 451

<211> 209

<212> DNA

<213> Homo sapien

<400> 451

ctgccttggt	tcaacagaca	tgcaaagatc	ctaggagaca	gtcccatag	accttcagac	60
attaaaaagg	gagccgtaca	gtttgtttga	agcacttcgt	cttaccatt	tatgcagggg	120
ccccaggaaa	cttacacaca	gccagaatga	ggttcccaaa	ggacttacat	taattatggc	180
tcttgcttcc	tttcacaaat	gagctgagg				209

<210> 452

<211> 457

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(457)

<223> n = A,T,C or G

<400> 452

ctgtctantc	ccttcaagag	ctgtttatag	aagcttgaga	atggggtaaa	aatttctgct	60
agcaaaatca	agttcttttt	gaaattttat	cagtaatcca	gaatttagta	gtccatgcct	120
tctcactcag	catttagaaa	taaaaatgtg	gtttcttaaa	cgtatatacct	ttcatgtata	180
tttccacatt	tttgtgcttg	gatataagat	gtatttcttg	tagtgaagtt	gttttgtaat	240
ctactttgta	tacattctaa	ttatattatt	tttctatgta	ttttaaatgn	atatggctgt	300
ttaatctttg	aagcattttg	ggcttaagat	tgccagcacc	acacatcaga	tgcagtcatt	360
gttgctatca	gtgtggaatc	tgatagagtc	tngactccgg	ccacttggag	ttgtgnactc	420
caaagctaag	gacagtgatg	aggaagatgg	catgtgg			457

<210> 453

<211> 277
 <212> DNA
 <213> Homo sapien

<400> 453
 ccaattgatt tgatggtaag ggagggatcg ttgacctcgt ctgttatgta aaggatgcgt 60
 agggatggga gggcgatgag gactaggatg atggcgggca ggatagttca gacggtttct 120
 atttcctgag cgtctgagat gttagtatta gttagttttg ttgtgagtgt taggaaaagg 180
 gcatacagga ctaggaagca gataaggaaa atgactacga gggcgtgatc atgaaagggtg 240
 ataagctctt ctatgatagg ggaagtagcg tcttgta 277

<210> 454
 <211> 198
 <212> DNA
 <213> Homo sapien

<400> 454
 gttaaaagat agtaggggga tgatgctaata aatcaggctg tgggtggttg tgttgattca 60
 aattatgtgt tttttggaga gtcattgtcag ttgtagtaata ataattggtg ggacgattag 120
 ttttagcatt ggagtagggt taggttatgt acgtagtcta ggccatatgt gttggagatt 180
 gagactagta gggctagg 198

<210> 455
 <211> 608
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(608)
 <223> n = A,T,C or G

<400> 455
 ctgagcaagc taaggaccag gggcaactag accctaataa tngtacttt tgaaaatgat 60
 acaaaactacc ttggttgtaa gaagtgcagg ttgaacactt taggagaaca gtcttcaaac 120
 tggcaattca aaatttccca ttatatgtga ataaaatttg aaggatgtta aatgtccatg 180
 gaaagttact cttgtaagtt aggatgcctt atactgaggc tttanaatga aagtacactt 240
 cacaaatgga atagtgaaca taaattacca gaagtcaaga taatagtcac actagtaagg 300
 taagcaaggt aaattccctt atacacaaaa attattttga tgacctttt caataatgaa 360
 tctgaaatga agtggtttta aaagctccct aaacacaaaa cgaacataaa actgcttaac 420
 aacttttagag ctcatgtaac attcttgctg aaaacagtta ctgaaattac cagcgaaatg 480
 atggaatatc tttaaagcag gncactcngt ataactctgga ataatttcac ttgctaactt 540
 ttaagaagta ttctctggac tataaatcnt gggcaaatag acttccactt tattattacc 600
 ccaaatta 608

<210> 456
 <211> 467
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(467)
 <223> n = A,T,C or G

```

<400> 456
cctggacctg tgtaaacctt caaacactct tttttacatt aggtcgtgaa gttaaatttt      60
ttactgtttc tgtgctacag actcttcaaa gggaaatagt taagtcaatt tcaaagaaaa      120
tgaccagcac atttttaaaa cattagaaat gatttgactt tgactatcta ctgccaaaaa      180
aagggttaagg aatttgtaat gagaagctaa aaactttaag gaattttaag gaactcaaaa      240
caaaaactca ttaaatgtaa ttaaagttaa ttctacaaat aaagcctctt aatacatctc      300
tataatagtc acttaagact taaattcaaa cactagcaaa ccacaaaatc agactgtntg      360
actgacatcc aaaagataaa tataaatcaa aatccgaccc cagcattagc caaggggtag      420
gtgttcctct tgaggaaggc aggaattcct cttctgccac ctgttgg      467

```

```

<210> 457
<211> 183
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1) ... (183)
<223> n = A,T,C or G

```

```

<400> 457
ccaaattttt tacttttaaac actgaaaaca gaggaagtta ataaaaattt taacctataa      60
agtccctctg ttgttagtca ttaacagcag attgtcagat aagactggta aaatgatggc      120
tgctaagcat ttgatgatcc aggcgcagga tgatcaaaact gcagcagatc atgcacgtga      180
cag      183

```

```

<210> 458
<211> 445
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1) ... (445)
<223> n = A,T,C or G

```

```

<400> 458
gaaaaatata aagccaaaaa ttggataaaa tagcactgaa aaaatgagga aattattgg      60
aaccaattta ttttaaaagc ccatcaattt aatttctggt ggtgcagaag ttagaaggta      120
aagcttgaga agatgagggg gtttacgtag accagaacca atttagaaga atacttgaag      180
ctagaagggg aagttgggta aaaatcacat caaaaagcta ctaaaaggac tgggtgtaatt      240
taaaaaaaac taaggcagaa ggtttttgga agagttagaa gaatttgga ggccttaaat      300
atagtagctt agtttgaaaa atgngaagga ctttcgtaac ggaagtaatt caagatcaag      360
agtaattacc ancttaatgt ttttggcntt ggactntgag ttaagattat tttttaaatc      420
ctgaggacta ncattaatgg gacag      445

```

```

<210> 459
<211> 426
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1) ... (426)
<223> n = A,T,C or G

```


153

<400> 459

cctatgatan	cttctctagc	tatcatactc	caatcagcaa	aaaatgagaa	aatgttgaga	60
aatagaagat	aattcctcat	ttaaggccac	cttctagaat	ttgtgcttaa	gattctgctt	120
tcttctcatg	ggccagcact	tcggcaactg	gcaaaaatta	gggtgtacagg	gatctaggta	180
atactgttta	tttgagcaat	aatatattgt	gctaacgttc	aggcatccta	ttactgagaa	240
ataagggaaa	atgagtgtaa	agtacaacta	agagtctcgg	cgacagggaa	aaataccatc	300
agttaaatat	ccatagtcct	agagcattta	tgtaaaactg	caatntgaat	cctgcaatac	360
atnttggtt	tttccctcag	tgataccatg	tgagggaagn	ngctctgtca	aggcggggccg	420
gataga						426

<210> 460

<211> 348

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (348)

<223> n = A,T,C or G

<400> 460

ccaaattttta	aaatgttatt	tttcatatca	tttataacct	tgtcacaatc	cacttaaaga	60
agtttggtta	tatttcactg	aaaattttct	tccagagtag	gttttttttc	gtgggttggg	120
gggtaacttt	actacaatta	gtaagtntgg	tgcagaattt	catgcaaatg	aggagtgcag	180
cagngtgata	atttaaacad	atntaaacaa	aaacaaaaaa	aatgaatgca	caaacttgct	240
gctgcttaga	tactgcagc	ttctaggacc	cggtttcttt	tactgatnta	aaancaaaac	300
aaaaaaanta	annacnttgt	gcctgaaatg	aancttggtt	ttttntna		348

<210> 461

<211> 378

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (378)

<223> n = A,T,C or G

<400> 461

ccactaagac	agaacggaat	ctagtagaag	tgcaccaatg	cttcagtccc	tcctactcag	60
catggtgagc	agtggccaat	ctgtgccctg	tggaaatgatg	ggcagataat	tctggcatgt	120
gtaaataata	ataaataatt	cacttggtgc	aggcagtatg	tctatgaatt	aaaacctagt	180
gtgtacacag	tgacctacatg	tggtacagcc	ccacagtagg	aatctacacc	aaaatattta	240
ttagaaggaa	tttggtccgt	actacatcac	gctttccgga	gggtaaaaaa	taaagtccat	300
ctatagacat	ttcaccacag	acccagagac	tgagtctggc	taaaacctgc	aaaatgtcta	360
taacaaaagn	ggatggct					378

<210> 462

<211> 197

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(197)

<223> n = A,T,C or G

<400> 462

gcgagggtcca	cactattaaa	agctgttggg	taattgaagg	tgatataaaa	tgactgtcnt	60
catttggagt	gngcagcaca	nttacttcat	gttgctcang	tttanaacaa	tntccccctgn	120
aagttctcac	acagatnggn	agaaatcata	cctantntng	gtnaatcact	atggcagccg	180
tngaagaatn	taagaga					197

<210> 463

<211> 279

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(279)

<223> n = A,T,C or G

<400> 463

cataagtgat	gangaggnaa	aatcantnaa	taagcctaca	acntagaata	cattaaaact	60
tgacacatata	catgttcaca	gcatgtatac	aatgataatc	cctacgggtt	aaccaagtta	120
tggttccctt	ctacagcaga	cacaaaacca	aggtgaacta	ggtnggcaga	tgtanaggga	180
ataccaaaaa	aagggtaatn	ngntcactga	ttctgaagna	tntgactgan	catactgagc	240
ttctgnactt	tggaatgca	tnnaggnaac	aatatcttg			279

<210> 464

<211> 552

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(552)

<223> n = A,T,C or G

<400> 464

gatgggttga	taggtgcagc	aaaccaccct	ggcgcattgt	taccaatgta	acaaacctgc	60
acatcctgca	caggtactcc	aaaactaaaa	gtaaaaaat	ctaaaagaaa	aaagaaaaag	120
aattaaacc	aaaatcactt	ccccatctgg	acttgattta	gatgaaaagc	ttctggactt	180
tgagctgatg	ctatagtggg	ttgaaaattt	tggggtcctc	agaaggggat	gaggatatat	240
tgcatgagag	agcaacatga	atcatngaga	gccagagtat	agagagnggt	gggtagactg	300
taggagagcc	ctcaatgatc	ccggctgtct	tgtattcgcg	ttgcacttac	ttgtataata	360
tggcagatgg	gatgtgatgt	cactttcaag	attangttat	aaatagacta	tggtttcaat	420
cagagggttt	tcttctctgt	ctanctctct	tttgggtagn	ttcattctga	gagaaagcca	480
nacctcngcc	gcnaccacag	ctaaggggag	anttcagcn	cactggcggc	cngttactag	540
tgatccgng	ct					552

<210> 465

<211> 444

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

155

<222> (1)...(444)

<223> n = A,T,C or G

<400> 465

ccactcttgg	tagaaacctt	gaaactttca	ccttgctggg	ctttagcaaa	gtttcctttt	60
acagttctgt	ttatgagctt	cagctactga	taaagcactt	cctgaacttc	tctattatca	120
tagngaccct	ctgaataacc	tgagtgactg	gctcggcaat	tcgctttata	accattctta	180
ttcccaaagt	tgagcacat	aaacatttag	atgtcttttc	ctgtaaaata	ttctagacat	240
ttacccaaac	tctagttaa	catatactca	acttgactg	tatatctccc	tgcttttttg	300
agacagagaa	gaaattcagg	aggtgnccca	tctccagagt	ttctctgttg	gaaagcagcn	360
atcaagaanc	ctttaaaaaa	ttggtgtnaa	gcntngccnc	ctgcagaaat	gcntngcccc	420
acattattct	tctggggnaa	agna				444

<210> 466

<211> 381

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(381)

<223> n = A,T,C or G

<400> 466

cctactatgg	gtgttaattt	tttactctct	ctacaagggt	ttttcctagt	gtccaaagag	60
ctgttcctct	ttggactaac	agttaaattt	acaaggggat	ttagagggtt	ctgtgggcaa	120
atttaaagtt	gaactaagat	tctatcttgg	acaaccagct	atcaccaggc	tcggtagggt	180
tgtcgctct	acctataaat	cttcccacta	ttttgctaca	tagacgggtg	tgctctttta	240
gctgttctta	ggtagctcgt	ctggnttcgg	gggtcttagc	tttggtcttc	cttgcaaagt	300
tatttctagt	taattcatta	tgcanagggt	ataggggnta	gtccttgcta	tattatgctt	360
ggttataatt	tttcatcttt	c				381

<210> 467

<211> 95

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(95)

<223> n = A,T,C or G

<400> 467

cctatanatt	ntggnttgta	tactgggtcc	tgaaaaccct	cttgngctc	tgtttttaag	60
gagctgaanc	caangancgc	caataataat	acttt			95

<210> 468

<211> 224

<212> DNA

<213> Homo sapien

<400> 468

cagtgggtct	ctgatgcctt	gcctgcagca	gaaggaggga	gcagagatca	agaggaagga	60
aaaaatcata	tgtacttatt	tgaaggtaaa	gattattcta	aagagcccag	taaggaagac	120
agaaaaatcat	ttgaacaact	ggtaaacctt	cagaaaaacc	ttttggagaa	agctagtcaa	180

gagggccgat cactccgaaa taaaggcagt gttctcatcc cagg 224

<210> 469
<211> 416
<212> DNA
<213> Homo sapien

<400> 469
ctgagttcta gttcaaaagc tttatcctta acttcgtcat gtactatgta aattctagaa 60
tagaaaaggg aaaggtaaga ttttggtaac ctccaaacat tgaagtagtt cacagacca 120
aagtcagtac aaattagaat gtccatccat aataaaaagta tctataaaaat tacacagaca 180
cattctacat agtatttaac attagagaag acaaattaca cagggactga aataaaatga 240
aacatctact ctcccgacaa atgttgaata tacctaatac acccaagttc agtttatttt 300
tgcacattgc ttttagagata taacttggct gggcacagtg gctcacacct gtaatcccaa 360
cactttggga gaccaaggcg gatggatcac ttgaggtcag ttcgagacta gcctgg 416

<210> 470
<211> 376
<212> DNA
<213> Homo sapien

<400> 470
caccttttaa ctgtatcaca aagtctgttg ctgtgggttac agcctttgtt tccagtgatg 60
ttttgtccat gctttccccc aacccttaac aatggttact caaaagaatg aaataatgag 120
tcattcattc gggaatatgt taaaatatcc ctctttatca ttacatttca ctgcttagaa 180
actaggctgt aattcaaggc aacagttaag tctgagaact gttaaaaaaa tctttgattt 240
tttttcattt ttaagaaaaa cctgcctatt taattgttca gacttgtaag aggttcttca 300
attacatcct ttttggttaa tgtattattt ctggaacaag tagataaaat tctacgcagt 360
aagcataata aaaatc 376

<210> 471
<211> 357
<212> DNA
<213> Homo sapien

<400> 471
ggcttcgtat aatggttctt ttgtcacccc tgatcgacga tttcgctacc cgtacaactc 60
tgacaagggg acgaaatgct tctgtgtatt cacctagtgg tcctgtgaac agaagaacaa 120
caactccacc ggatagtggg gtactgtttg aagggttagg catttcaaca agacctagag 180
atgttgaaat tcctcagttt atgagacaga ttgcagtaag gaggccaaact acggcagatg 240
aaagatcttt gcggaaaatt caagaacaag atattattaa ttttagacga actctttacc 300
gtgctggtgc tcgagttaga aatattgaag atggtggccg ctacagggat atttcag 357

<210> 472
<211> 557
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(557)
<223> n = A,T,C or G

<400> 472
cngagatgac atttacaatc tcttgaaang cagcagatgg cactctggtg cttcctatga 60

agcaacatgc	ttgaaatcaa	gggccaacaa	ttgttgtagg	aaagcaaaat	atacctctaa	120
cacctacgtt	taccaaaaaa	gctgacatct	caaactctga	gttggtgaga	ctcaaatttc	180
tcattcccca	agaagcctat	tacggtagtg	tgntggatgc	tttttgtatc	tctgataggc	240
aggcactata	atggggggaa	atacttctga	ataaaaacat	tggctgtctt	gcaactgtgc	300
atataatgtc	tattcaaggg	ggcagtgtgc	ctagcatgat	cctgaaatgt	tgagataaaa	360
ggaagtggc	attaaagcac	tatttgtctt	atatgaaaag	agtgactcta	tcttccagta	420
aacaagantt	cctgcaatga	aaaagaaatt	ttttccttca	ttatctataa	actatacaaa	480
ataaccttcc	tttttaacct	aagactcaaa	cattnatatt	tgattttatt	ctatttgata	540
ccaattggta	tgtccag					557

<210> 473
 <211> 264
 <212> DNA
 <213> Homo sapien

<400> 473						
cctccatcaa	cagaaaggat	aaagacccct	tcgggtctcc	tcattaattc	tgaactggaa	60
aagccccaga	aagtccggaa	agacaaggaa	ggaacacctc	cacttacaaa	agaagataag	120
acagttgtca	gacaaagccc	tcgaaggatt	aagccagtta	ggattattcc	ttcttcaaaa	180
aggacagatg	caaccattgc	taagcaactc	ttacagaggg	caaaaaagg	ggctcaaaag	240
aaaattgaaa	aagaagcagc	tcag				264

<210> 474
 <211> 165
 <212> DNA
 <213> Homo sapien

<400> 474						
aattcagctt	ccagaggccc	ttattagtcc	ttgttgacag	aaacatagat	ttggcaactc	60
ctttacatca	tacttggaca	tatcaagcat	tggtgcacga	tgtactggat	ttccatttaa	120
acagggttaa	tttgaagaa	tcttcaggag	tggaaaactc	tccag		165

<210> 475
 <211> 417
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(417)
 <223> n = A,T,C or G

<400> 475						
aagttctctt	cttgttttta	acacattcct	gataacttct	aaagatgacc	aaaataaaac	60
agaatatcta	cagagatcat	tttctgaatt	ttttgtacat	ccaaggataa	caacataaaa	120
aaaataaaac	tggacagcat	tccacatcca	agtgcacaga	accatttttg	caagattaaa	180
taatgtaaac	attgggaaca	gccaaatcag	cgaagaatgc	caacacctca	aaacacctgg	240
tggtgccgct	tcattaagtg	gttcaaaatc	cagatctata	attgcgcaat	attcaccgta	300
tataaaaaga	aatggatatt	aattttgaca	aatagctgca	actgagactt	ctttttattt	360
cttttatatgn	gnatatagtg	aattttttatt	attttttaaaa	ttttatttat	tttttta	417

<210> 476
 <211> 321
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(321)
 <223> n = A,T,C or G

<400> 476
 catttaataa caaaaacaac ctgtacggaa aaccnaagg caaccacata gcatatgtaa 60
 aatgtgcaaa tacactttta aatgcangtt attctatagc anttgcaaga tagaatttca 120
 ctgtaattag ggaatctagc tcatcctaac ttaatagnct tttgcatgtn tagacaatgc 180
 aattctacaa ggnacnactc agcgttgatg ctaaaagtatg aaacacatcc tcagattatt 240
 catccgaaaa tattaaaata gcntcatggt ttattattct ttaatgagtc ntgagctcat 300
 ttctaaagct tcataaagca t 321

<210> 477
 <211> 546
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(546)
 <223> n = A,T,C or G

<400> 477
 gctgtgggta tattgtaaat gaagcatcta acatgtgcac aacttgcaac aaaaactcct 60
 tggactttta atctgtcttt ctcagtttcc atgtgctgat tgatctgact gatcacacag 120
 gcacccttca ttctgtagt ctcacaggaa gtgtgtctga ggagactttg ggctgcacgg 180
 tacatgagtt tcttgcaatg acaaatgaac agaaaacagc attaaagtgg caattcctct 240
 tggaaagaag caaaatttat ttaaaattcg ttctatcaca cagagcaagg agtggattga 300
 aaattagtgt actctcgtgc aagcttgcag atcctactga ggcaagcaga aacttgtctg 360
 gacaaagaca tgtttaaaac ggtctatcat tttgaactct ggaaaagtat aagagtttta 420
 actcccttta aaattggaata ttaatttgaa aattatgggg aaaattgcat tttgtttaca 480
 tgtgtggaac atgtttctag aaattggtat ggcgggaagg gggctgggtg agtctgaagg 540
 acctcn 546

<210> 478
 <211> 100
 <212> DNA
 <213> Homo sapien

<400> 478
 aagaaaagtg gtaaaatcaa gtcttcttac aagagggagt gtataaacct tggttgtgat 60
 gttgactttg attttgctgg acctgcaatc catggttcag 100

<210> 479
 <211> 508
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(508)
 <223> n = A,T,C or G

<400> 479

gnnttcctaaa	ttcttctaac	tcttccaaaa	gccttctgcc	ttagtttttt	ttaaattaca	60
ccagtccttt	tagtagcttt	ttgatgtgat	ttttaaccaa	cttccccttc	tagcttcāag	120
tattcttcta	aattggctct	ggtctacgta	aacaccctca	tcttctcaag	ctttaccttc	180
taacttctgc	accaccagaa	attaaattga	tgggctttta	aaataaattg	gttaccaata	240
atttcctcat	tttttcagtg	ctattttatc	caatttttgg	ctttatatatt	ttctatcttc	300
tatacttctc	caatacttgt	cttagcttgt	ttttcatttt	ctatctgaaa	ctcttgacaa	360
tatcttctaa	tttccctatc	ttctctattc	ttttcttcgc	cttcccgta	ttctgcttcc	420
agntttccac	ttcaaacttc	tatcttctcc	aaattgttca	tcctaccact	cccaataatc	480
tttccatttt	cgtgtagcac	ctggncag				508

<210> 480

<211> 81

<212> DNA

<213> Homo sapien

<400> 480

ggtgcccttt	tcctaact	cacaacaaaa	ctaactaata	ctaacatctc	agacgctcag	60
gaaatagata	aggaaaatga	c				81

<210> 481

<211> 306

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(306)

<223> n = A,T,C or G

<400> 481

tcgccttcgg	cgcgcgggca	ggtaggggn	acaagacgct	acttccccta	tcatagaaga	60
gcttatcacc	tttcatgata	acgccctcat	agtcattttc	cttatctgct	tcctagtctc	120
gtatgccctt	ttcctaacac	tcacaacaaa	actaactaat	actaacatct	cagacgctca	180
gggaatagaa	accgtctgaa	ctatcctgcc	cgccatcatc	ctagtctctc	tcgcctccc	240
atccctacgc	atcctttaca	taacagacga	ggtcaacgat	ccctccctta	ccatcaaata	300
aattgg						306

<210> 482

<211> 582

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(582)

<223> n = A,T,C or G

<400> 482

ggggggaaca	gtcattatac	attatttaga	ctcattcctt	cttccagtgc	ccttatgatt	60
atttcctacc	tttaccattg	atcttaaaact	gngcaggcta	aaaagaggaa	ccagaactcc	120
cttaagcact	tttaagacta	tttaaaaaat	aaagntttgt	tggcattgaa	gagtaagctg	180
cttaagggac	tgaatgaaaa	gatagtaccc	tttgtggctg	tatgaagaga	gaaactgaat	240
ttctatccaa	gagaccttaa	tntagcctat	tagggaatta	tcttcccaa	aagtacaagt	300
aattttgcac	tgcaggagaa	ggataagtag	atttgattta	catcacattt	tatacacacc	360

tttcaagang	gagaaatctg	cttcataaat	agnaggaatc	tatgcttaaa	ctnaacattt	420
aatggtgacn	tcttacaaca	gccttgaaaa	nnattggaan	tcngacntga	ngngggaaac	480
tggaanaaag	aatatctttc	tcttctgcat	cctttnatcc	tcaaacttag	catggattca	540
cacgctgagg	aaangttngg	tnacnaccng	aacatttaga	ta		582

<210> 483
 <211> 275
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(275)
 <223> n = A,T,C or G

<400> 483						
gcctcactaa	aataacagat	ttcagtatag	ccaagttcat	cagaaagacc	caaattggaat	60
gattttacaaa	atagaacact	ttaaaccagg	tcagtcctat	ctttttgtag	ctgaaggcta	120
tcagtcataa	cacaattttc	cgtacacctc	tgctcattat	ggaattacac	ttaaaacgaa	180
tctcaagagg	gtgaccattg	ttgtttcaga	taccatccct	aaggagagt	gttaacagga	240
agattgcccag	ngttactgat	ggaaagaagc	gcttg			275

<210> 484
 <211> 434
 <212> DNA
 <213> Homo sapien

<400> 484						
catattttcca	caggccaatt	tctttctggt	tttctgctaa	gctatttcag	catttttagct	60
tttctctctt	gctttgttta	ctcatgattg	ccagatggct	acgttacctc	taagcatcag	120
atcctcacaa	attaatgggt	aaatgtaagg	gagggatttt	actctcttgc	attaaaaaaa	180
agcttttattg	agatataatt	tactgtaaca	ttgactcatt	taaagtatgc	tagtcaatag	240
accaaattctt	gaataaaactc	ccattcacaa	ttgctacaaa	gggaataaaa	tagctgggaa	300
tatagctaac	aagggaagt	aagggcctct	tcaaggagaa	ctacaaacca	ctgctcaaga	360
aataagagag	gatacaaaaca	aatggaaaaa	cattccatgc	tcatgaatag	gaagaatcaa	420
tatcgtgaaa	atgg					434

<210> 485
 <211> 291
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(291)
 <223> n = A,T,C or G

<400> 485						
ncaccactgc	agccctacat	acagttgaaa	aaaaattcca	ttctgttaac	atttgtttta	60
taagtttttca	cgcaatacac	aaaaaacccc	tctgcacttc	ttgtaaagaa	caaaaaagat	120
acacaacagt	taagcgtaaa	gatcacaggc	aatagcattc	aaacatggat	gtgggtagag	180
aaaggagtac	ctggcatgag	tacctgctta	gtttgactga	atccttgatt	tttaatttgg	240
cttttcatgg	gccgctcaca	acaccaacgc	tgtgtgaggt	atggtagtca	g	291

<210> 486

161

<211> 274
 <212> DNA
 <213> Homo sapien

<400> 486
 ctgtaatat gtagttgctc cagaatgtca agggcagctt acggagatgt cactggagca 60
 gcacgctcag agacagtga ctagcatttg aatacacaag tccaagtcta ctgtgttgct 120
 aggggtgcag aaccggtttc ttgtatgag agagggtcaa ggggtgggtt cctgggagaa 180
 attagttttg cattaaagta ggagtagtgc atgttttctt ctgttatccc cctgattggt 240
 ctgtaactag ttgctctcat ttaatttca ctgg 274

<210> 487
 <211> 184
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(184)
 <223> n = A,T,C or G

<400> 487
 tggcaccaag attctcagct cacgggtacca gcatctgatt gtcggactac ctgctgcttt 60
 ccctgatatt tatacatgat attcgnaaaa tgtaagaag ctattattca tacagacatc 120
 tagagaagga gngaagnttt taaaaaata aaaaaatact tatttcaagc tttagctgtg 180
 ttct 184

<210> 488
 <211> 393
 <212> DNA
 <213> Homo sapien

<400> 488
 ctgcattttt attgcatct gcagatgaac tggaaaatct cattttacaa cagaactggg 60
 acagacgacc accatattca ctgaggctta aatttgcagt ttccactaat gacattttga 120
 ttcccaaca gagatacttc tggcttact gcacagtctt ttaagagaaa tacttccatt 180
 atgccacatt gtccttgatc cgtaagtgat gtgttaagg gcttcaaagg aactctgacc 240
 tctgaagtac ttgagctact ttagtatgtc cagcctattg ctttttgtt tagtgtgtca 300
 ccataaatat caggggcata aaaggctatc tattcttaat tcaaggataa aacagaagaa 360
 gcttgtggta taaaacaata gttcaagatc cag 393

<210> 489
 <211> 607
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(607)
 <223> n = A,T,C or G

<400> 489
 gtgcttatgt acttaagggg aactactcta actgggtgaa gagtangatg aagcatccat 60
 gtccctacaa aggatatgaa ctcacacctt ttatggctg catagtattc catgggtgat 120
 atatgccaca ttttcttaat ccagtcctat atcgatggat atttgggttg gttccaagtc 180

162

```

tttgctattg tgaatagtgt cgcaatgaac atacatgtgc atgtgtcttt atagcagcat      240
gatttataat cctttgggta tatacccagn aatgggatag ctgggtcaaa tggattttct      300
agttctagat ccttgtggaa ttgccacact gtcttccaca atgggtgaac tagtttacag      360
tcccaccaac agtgtaaaag tggtcctatt tctccacatc atctccagca cctggtgggt      420
cctgactttt taatgattgn cattccaact ggtgtgagat ggtatatcac cgtgggtttg      480
atttgcattt ccctgatggc cagtgatgat gaacnttttt tcatgtgggt tttggctgca      540
taaatggcct gcctttnta cttctataaa atttttcann tcttattatt attcctgggg      600
gnttaag                                           607

```

<210> 490

<211> 179

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(179)

<223> n = A,T,C or G

<400> 490

```

cttctaggaa tactagtata tcgctcacac ctcataatcct ccctactatg cctagaagga      60
ataatactat caatgntcat tatagctact cccataaacc tnaacacca ctccctctta      120
gccaatattg ngcctattgc catactagtc tttgccgcct gcgaagcanc ggtaggacc      179

```

<210> 491

<211> 399

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(399)

<223> n = A,T,C or G

<400> 491

```

cctctacctg taatcacatt aatttttcta aagacagggg nggtgttttg aagataaatg      60
tcattagtct atgataatag catcatagga caattagcca ttttagactt gaccatattt      120
tctcttttta gcatatagcc atcttgatat ttagngggga gactactcca atggagcaac      180
agtttcattt tacatgattg gatttagaaa tttaaaactt ttaaactcat aagaattcta      240
aataatttga aaatggaaac atttgaccca cagtctagca gcataaatac atttataaaa      300
tacttcattg ttgatcttag gtcattgatt taaaacagaa tttggtgact atgggcaggt      360
ggaggggggc ngtgaggaag gtataaaaga gaaatcttt                                           399

```

<210> 492

<211> 482

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(482)

<223> n = A,T,C or G

<400> 492

```

ctccacctta ctaccagaca gccttagcca aaccatttnc ccaaataaag tataggcgat      60

```

```

agaaattgaa acctggcgca atagatatag taccgcaagg gaaagatgaa aaattataac 120
caagcataat atagcaagga ctaaccctta taccttctgc ataatgaatt aactagaaat 180
aactttgcaa ggggagccaa agctaagacc cccgaaacca gacgagctac ctaagaacag 240
ctaaaagage acaccgtct atgtagcaaa atagtgggaa gatattatagg tagaggcgac 300
aaacctaccg agcctggtga tagctggttg tccaagatag aatcttagtt caactttaaa 360
tttgcccaca gaaccctcta aatccccttg taaatttaac tgttagtcca aagaggaaca 420
gctctttgga cactaggaaa aaaccttgta gagagagtaa aaaatttaac acccatagta 480
gg 482

```

<210> 493

<211> 207

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (207)

<223> n = A,T,C or G

<400> 493

```

cataaatatt atactagcat ttaccatctc acttngngga atgctagtat atcgctcaca 60
cctcatatcc tccctactat gcctagaagg aataatacta tcactgttca ttatagctac 120
tctcataacc ctcaacaccc actccctctt agccaatatt gtgcctattg ccatactagt 180
ctttgccgcc tgcgaagcag cggtagg 207

```

<210> 494

<211> 283

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (283)

<223> n = A,T,C or G

<400> 494

```

ccaattgatt tgatggtaag ggagggatcg ttgacctngt ctggtatgta aaggatgcgt 60
agggatggga gggcgatgag gactaggatg atggcgggca ggatagttca gacggtttct 120
atttcctgag cgtctgagat gttagtatta gttagttttg ttgtgagtgt taggaaaagg 180
gcatacagga ctaggaagca gataaggaaa atgactatga gggcgtgatc atgaaagggtg 240
ataagctctt ctatgatagg ggaagtagcg tcttgtagac cta 283

```

<210> 495

<211> 590

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (590)

<223> n = A,T,C or G

<400> 495

```

tatgtatata attttcttag ttactagcat agagaaatta ctgatttaaa aaaacatttc 60
aaattctagc atgttgtagg attctattgc ctttctaaa aagtacatct tgcttatccg 120

```

164

```
atttctaaca aaactatttta atttgaagaa gggagaatga atttggataa aaagcaaaaa 180
tttaaaggta ctcaaatttta ggcaaaccat taaagcaatc ttagtttaca gtttaattggg 240
tagaatgggc aacacttttct tcaggtttagt tcatggagtg gatatgcatt gatagaacaa 300
cttagagatg cttttacagt tgagaaagct cattatatatt gttatcttta agaatcagct 360
tattttatttc atatgtttgt tctttaagaa gaccaaaagag ccctgcaaatt gaatggtgat 420
ttgttttttt gtttgtttta tattttttgta gagataagat ctcactttgt tatgttgccc 480
aggctggctc caaactctca acttgaagtg atctgcccac ctcagcctcc caaagtgggtg 540
ggattacagg catgagccac cgcacctgga cctgcccggg cggncgctcg 590
```

<210> 496

<211> 307

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(307)

<223> n = A,T,C or G

<400> 496

```
ggagattagt atagagaggn anacnttttt tcngnatatt tggtcacatg gataagtggc 60
gctggccttc catgattgtg aggggtagga gccaggtagt tagtattagg aggggggnng 120
ttaggggggc tgaggagaag gttggggaac agctnaatag gttgttnngt gatttggnnta 180
aaaaacanta ggggggatgat nctaataatt antgctgtgg gtgggtgtgn tgattcaaatt 240
tatngccttt ttcggagann catgtcangt ggtagtaaat ataattgttg ggaccattan 300
ttcttan 307
```

<210> 497

<211> 216

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(216)

<223> n = A,T,C or G

<400> 497

```
cattttcttc ttggtttctt cagttaagtc aaannngnac gttcctcttt ccccatatat 60
tcatatattt ttgctcgtaa gtgtatttct tgagctgttt tcatgttggt tatttcctgt 120
ctgngaaatg gtgttttttt ttgttggtgn tggttttttt tttttttttt aaactnggna 180
ccncnaantt gaaaaaatgn ttntttttcc ctnaca 216
```

<210> 498

<211> 375

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(375)

<223> n = A,T,C or G

<400> 498

```
gaatttcctg gcaccttttc tcgctagaga agattnngtg tgactggggt gcctataagc 60
```

```

catatagata caaacttttta tctctaatac caagtcttag agggatatat taatagatct 120
aataaatttta ttcttagact tattgtttca tgggntagtg agtctttgct actggagaca 180
atacagactt gtcagttttt ttaaaaaaaaa aaaatttgcc aagctancac attaaaaana 240
tntcctaagg ctntcatttt atgaggatga ttataaacnt ttntgngata aatatcacca 300
taataaactg ttaagtacaa ctgcnggccn cccttanagn gaattcctnc agttanaaat 360
ttattttttt gccaa 375

```

<210> 499

<211> 215

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(215)

<223> n = A,T,C or G

<400> 499

```

ccacnaaagc agaagcttaa agcatagtag taaagaggnn aaaaagaagg acgaaaataa 60
atcagatgac aaggatggta aagaagttga cagtagtcac gaaaaggcca gaggtaatag 120
ttcactcatg gaaaagaaat taagtagaag gttgtgcgaa aatcggagag gaagcttgct 180
acaaaaaaaa aaaaaaaaaa aaaaaaaaaat gtttt 215

```

<210> 500

<211> 489

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(489)

<223> n = A,T,C or G

<400> 500

```

ccactacgat aagcaggtag ctgggttttg tagtgagntt gtccttaag ttacaggaac 60
tctccttata atagacactt cttttccta gtccatccct catgaaaaat gactgaccac 120
tgctgggagc caggagggat gatgaccaac taattcccaa accccagtct cattggtacc 180
agccttgagg aaccacctac acttgagcca caattggttt tgaagtgcac ttacaaggnt 240
tgtctacttt cagttcttta ctttttacat gctgacacat acataactg cctaaataga 300
tctctttcag aaacaatcct cagataacgc atagcaaat ggagatggag acatgatttc 360
tcatgcaaca gcttctctaa ttatacctta gaaatgttct cttttttatc atcaaatctg 420
ctcaagaagg gctttttata gtagaataat atcagtggat gaaaacagct taacatttta 480
ccatgctta 489

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<210> 501

<211> 286

<212> DNA

<213> Homo sapien

<400> 501

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aaaaacactc aaacacagcc ttggaggagg gagtcagttt taaaagactc ttataaaagt 60
aatatactgc tagctctgaa gaatcggagg ctaaaatcat ctcttcaagt cccaggggaa 120
tcccaaagaa ctccagggga aggtgggatg ggccagagag ctctggaagc ttccaggtct 180
gttgcaagcc tcacctggta cacagtaggc tcttcagggt ctgtcaggaa cccaggagcc 240
tcccctagca cacagtaggc tcacaaaaag ggagcactgc tgctgg 286

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<210> 502
 <211> 168
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(168)
 <223> n = A,T,C or G

<400> 502
 cctatgattg tgggggcaat gaatgaagcg aacagagntt cgttcatttt gggtctcaga 60
 gtttggtata attttttatt tttatgggct ttggtgaggg aggtaagtgg tagtttgtgt 120
 ttaatatatt tagttgggtg atgaggaata gtgtaaggag tatggggg 168

<210> 503
 <211> 173
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(173)
 <223> n = A,T,C or G

<400> 503
 cctttataat aaattaggca aaaggttcag tgcnnnggcta tantggacaa catgaaactc 60
 cataaaaaatg actggatagg gggactgctt gagacttttc ttttgggcat tactaacaga 120
 attcaaagaa attccaacca cgcttatattt tccaaattct actgaaatga gag 173

<210> 504
 <211> 310
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(310)
 <223> n = A,T,C or G

<400> 504
 tagtattcta tttaaaaatt aagttttggg gtctgtaaaa tatacaggac aatgactttt 60
 ttaaaatgta agttaatacc tcctcctcac ttgtcttaat tgaacttagg tgtttattct 120
 taaaggngga ccttgatgaa aatgttgaga tgggaagtgt tattaggcaa aacttggttat 180
 agattttctca tataactcct aattgaccct tagaatttta acaaccgcgc ctggcccaat 240
 agactgtttt ttagagtant tttaggctct cancaaaatt gaggggaaaa tacagggtgt 300
 tcccattaaa 310

<210> 505
 <211> 530
 <212> DNA
 <213> Homo sapien

<220>

167

<221> misc_feature
 <222> (1)...(530)
 <223> n = A,T,C or G

<400> 505
 cctcagggaa cttacaatta tggcaaaagg ggaaggggaa gcaagcacct tcttcacaag 60
 gcatcaggag agagagagaa agagagtagg ggaaactacc ccttttaaac catcatatcc 120
 tgtgagaact ccctcagtat tagaagagca tgaggggaaac cgcctccata atccaatcac 180
 ctcccaccag gaccatccct caatacatgg gggttacaat tcaagatgag gttcgggtgg 240
 ggatacagat ttaaaccata tcagaatggg taatgatatt gttgtatttt accaactata 300
 atcttcttag tggtatagta caataatgta aaaaattgag taaatttggt ttctatatta 360
 ttctgttttt ggaaaacatg tatatagtcg gggctgtttg tctcaagaaa atatggtaaa 420
 ctctgctggt ttggctcactg gtgcctagaa tttggggatg tacattgggt ttgattcaca 480
 tgcacatttc cttctagtcc acagtaacta tttctaacta tttcccnata 530

<210> 506
 <211> 352
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(352)
 <223> n = A,T,C or G

<400> 506
 cttgaacgct ttcttaattg gtggctgctt ttaggcggta ctatgggtgn taaatttttt 60
 actctctcta caagggttttt tcctagtgtc caaagagctg ttctctcttg gactaacagt 120
 taaatttaca aggggattta gagggttctg tgggcaaatt taaagttgaa ctaanattct 180
 atcttggaca accagctatc accaggctcg gtaggtttgt cgcctctacc tataaatctt 240
 ccactattt tgctacatag acgggtgtgc tcttttagct gttcttaggt agctcgtctg 300
 gtttcggggg tcttagcttt ggctctcctt gcaaanntat ttctagttaa tt 352

<210> 507
 <211> 370
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(370)
 <223> n = A,T,C or G

<400> 507
 cctaactaga tcttatcaga atagggggga agggngtcgg ttcctcctta ttgagtgtta 60
 atgaccctgt aagatgtaat ttcttttatt tcattctggt acctagaaaa tctatcacag 120
 ccttgtagta ttgattgctc aatctataaa gagctcagtt tacagcatga ctggttagtaa 180
 cagggntatt ttaatgagtg actcttcaac acctcagagt ttcactaaat tccaacccat 240
 cagcccagta gtctaacatt aagggtctta ggaaatgaga acttatcacc tttccttatc 300
 atgaaaagggt aacctccagg taacaaaaaa tagaacttcc tctgtgttcg ttttttatag 360
 aaattactgg 370

<210> 508
 <211> 129
 <212> DNA

168

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(129)

<223> n = A,T,C or G

<400> 508

ctgttaaaag aacaaactta gcaatatata acagttnnggt aacaggattt ttgactattc	60
actttgggag ttatttttaa aaatccactt ttttactgag tcttactaca taccaggcac	120
tgtacttg	129

<210> 509

<211> 422

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(422)

<223> n = A,T,C or G

<400> 509

ntgggaagtc gtgacatcca tgggaaccca gcgctgtgat gctgggtgttt gngttctccg	60
cgagaagtga ccattgttg agcaccatcc agagctagt accantncag tggacagtta	120
gtgggagaat caaaaatcct ttccagaatg tctgtttctc actacntgca ccggngatt	180
acaggcacca gtgcagngat gattgtactt atttgacaca tactccccgt cntcctggnt	240
nttggtcctg anaanggtgg gtaaatttc caggaaaaan aatgcacatt gaatggatgt	300
gagagaccac attgcctctc ccactgctt ggggagcact ttctgtcat ttctaactta	360
ccacntgctt ggtgtactat atgtatgttg tgcctcatat gttgcaaaga actaangtga	420
gt	422

<210> 510

<211> 238

<212> DNA

<213> Homo sapien

<400> 510

ccacctatga attggtgggt tacctactca atggatagca gcacgaggac tgctgtactg	60
cacaaaaaga agacaaaaag attacagtgg accatgggat acagaagcca gcatggcaga	120
cagaagaaaa atagtttggg aacatgtaac taccctaagt ggaagttttg ttgttagaat	180
tatagtaatc acaccacatt acttggcctt tcggtaatgt gaaaaaaaaa aaaaatcc	238

<210> 511

<211> 254

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(254)

<223> n = A,T,C or G

<400> 511

ccnattgatt tgatggtaag ggagggatcg ttngggctcg tctgttatgt aaaggatgcg	60
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tacggatggg	agggcgatga	ggactaggat	gatggcgggc	aggatagttc	agacggtttc	120
tatttcctga	gcgtctgaga	tgtagtatt	agttagtttt	gttgtaagng	ttaggaaaag	180
ggcatacagg	actaggaagc	acgataagga	aaatgactat	gagggcgnga	tcatgaaagg	240
tgataagctc	ttct					254

<210> 512
 <211> 269
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(269)
 <223> n = A,T,C or G

<400> 512						
cctacctgta	aactacagta	ctttatatat	ctatgggntt	aataaaaaana	aaatccacaa	60
atcttaaaaa	ggaactttta	atgcagggct	atattgaatt	ggnaaactgc	aacacaaact	120
ggcgcaacat	aggtaaata	ataccaatct	cactctatgt	gatgcaagca	tgctactttc	180
ccactaattt	aaattacttt	caaccactat	gagccagaat	gcattgcctga	accttaaact	240
gcacttttaa	aagtaacatc	ttggcctaa				269

<210> 513
 <211> 266
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(266)
 <223> n = A,T,C or G

<400> 513						
ggaggggggt	tgtagggggg	tcggaggaga	aggntgggga	acagctaaat	aggttgttgt	60
tgatttggtt	aaaaaatant	agggggatga	tgctaataat	taggctgtgg	gtgggttgtgt	120
tgattcaaat	tatgtgnttt	ttggagagnc	atgncantgg	tagtaatata	attgttgaga	180
cgattagttt	tagcattgga	gtaggtttag	gttatgnacc	gtactctagg	ccatatgtgt	240
tgganattga	nactagtagg	gctagg				266

<210> 514
 <211> 271
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(271)
 <223> n = A,T,C or G

<400> 514						
acatgcaana	aatcgagaat	cttaaaaaac	annacgaanc	tgccctggaa	nncttactgg	60
nntangatat	ttatnttgcg	gctgagatac	ttgaacaact	tcggatcnga	antagacaan	120
aangggnant	tntatactgc	nncagagggt	acacagntca	ttgtattaga	gangaacana	180
tgggtctggt	gttcacacat	tggggggaan	atgggcgtnn	acangagagg	nnganaaacn	240
anganagcct	ncctggttng	cataanaaaa	a			271

<210> 515
 <211> 328
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(328)
 <223> n = A,T,C or G

<400> 515
 ccaatgaggg gcaaaagtgag cgncnagaag angttttgac tgaaataaat caaacacaaa 60
 aatntaagtt cacagtgaca gtttaacaa aatccaaaca aactaacaac anaaacaccc 120
 cttgntttgc ctctagtggg aggtgggana acacaanctc gtcctaaaaa ttgactagta 180
 aaggggaaaa cccggtcatt tncctactct ttccangaaa tatctaatac aagaaagaac 240
 ttctnctcat tatacngaag gaatttngaa aaatgatgta tttttggaac acctaantga 300
 aatactggaa cctgggcaag ttcaccac 328

<210> 516
 <211> 220
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(220)
 <223> n = A,T,C or G

<400> 516
 ncctnagttg aaggaccccca tgtacatata ggccagggga gcagtactag gntaactaga 60
 aggatctcat ccccatatgt gggctcattt caagtctatg gatgactacc ttcattgntg 120
 tgtgcgagat ggtttcaccc cttgaaaata tgggcacttc ancataanat agcnaaatct 180
 ttataatgat caatncatcc tacctccttt tacatgcatg 220

<210> 517
 <211> 296
 <212> DNA
 <213> Homo sapien

<400> 517
 tgcgatttct tccttgttgt ttgctttggt ctgtgttcaa tccagagagc ttaaattgtc 60
 attatttttg gaagaaaacc tgtatttttg ttagtttaca atattatgaa atttcacttc 120
 aggagaaact gctgggcttc ctgtggcttt gtttcttag tttcttttc cgtgccgtgt 180
 attttttaat tgatttttct tcttttactt gaaaagaaag tgttttatct tcaaactctg 240
 tccatattta cattctagtt cagagccaag ccttaaactg tacagaattt ccactg 296

<210> 518
 <211> 299
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(299)

171

<223> n = A,T,C or G

<400> 518

gaagatagaa	aaatataaag	ccaaaaattg	gataanatag	cactgaaaaa	atgaggaaat	60
tatttggaac	caattttattt	taaaagcccg	tcaatttaaa	ttctggtggt	gcagaagtta	120
gaaggtaaag	cttgagaaga	tgagggtggt	tacgtagacc	agaaccaatt	tagaagaata	180
cttgaagcta	gaaggggaag	ttggttaaaa	atcacatcaa	aaagctacta	aaaggactgg	240
tgtaatttaa	aaaaaactaa	ggcagaaggc	ttttggaaga	gttagaagaa	tttggaagg	299

<210> 519

<211> 464

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(464)

<223> n = A,T,C or G

<400> 519

gctgcacatc	ggaggaaaac	tcggtaaaagc	agaatgaggt	tgatatgttg	aatgtatttg	60
attttgaaaa	ggctgggaat	tcagaaccaa	atgaattaaa	aaatgaaaag	gaagtaacaa	120
ttcagcagga	acgtcaacaa	taccaaagg	ctttggatat	gttattgtcg	gcaccaaagg	180
atgagaacga	gatattccct	tcaccaactg	aatttttcat	gcctatttat	aatcaaaagc	240
attcagaagg	ggttataatt	caacaggtga	atgatgaaac	aaatcttgaa	acttcaactt	300
tggaatgaaa	tcattccagg	atttcataca	gtttaacaga	tcgggaaact	tctgtgaatg	360
tcattgaagg	tgatagtgc	cctgaaaagg	ttgagatttc	aaatggatta	tgtggtctta	420
acacatcacc	ctcccaatct	gttcagttct	ccagngtcaa	aggc		464

<210> 520

<211> 221

<212> DNA

<213> Homo sapien

<400> 520

ctgatattcta	cttattttaac	acaagtctct	aatacaatac	aattttatta	attttattcc	60
acatgccccca	cattagatct	ctagactcat	tcattcctaca	tacctacttt	gtatcctttg	120
acctacatct	ccctacttcc	tcctccagtc	cccaccccc	acccactggt	gctaaccact	180
gtttcattcc	cttttttcatt	ctacatatgt	gagatcatgc	t		221

<210> 521

<211> 312

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(312)

<223> n = A,T,C or G

<400> 521

ctgatagctt	tctcttcgcc	tagattaata	tcttctnnct	tcccattcac	agccccacc	60
gacatcaaag	ctttgctggt	ttatctgtca	aaaatgtctt	cacacttttc	attcttaaat	120
aaaagtgtctg	agtaaggaca	ttttcacaac	aaatttttat	tttacaaaac	ttacaatgat	180
ttgaatccaa	aacaactttc	attatttaac	tgtaaagtaa	atatatatatt	tattaggngt	240

172

gtcttagttc attttgtgct gctttaacag tgtatccttg tgatagttgt ggggtggggg 300
 aggggggaag ga 312

<210> 522
 <211> 336
 <212> DNA
 <213> Homo sapien

<400> 522
 ccttctttcc ccactcaatt cttcctgccc tgttattaat taagatatct tcagcttgta 60
 gtcagaccca atcagaatca cagaaaaatc ctgcctaagg caaagaaata taagacaaga 120
 ctatgatatc aatgaatgtg ggtaaagtaa tagatttcca gctaaattgg tctaaaaaag 180
 aatattaagt gtggacagac ctatttcaaa ggagcttaat tgatctcact tgttttagtt 240
 ctgatecagg gagatcaccc ctctaattat ttctgaactt ggtaataaaa agtttataag 300
 atttttatga agcagccact gtatgatatt ttttaag 336

<210> 523
 <211> 172
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)... (172)
 <223> n = A,T,C or G

<400> 523
 ngacnggcnc ntggctatgt ntatagatag ggctttaacc actatctgng aagcangagn 60
 gacannatc ttgctctcac atnccacngg anacgtatct ctcttctctt acnagcgaag 120
 aaccatctnt ttctaaagcc cccattctat tgcccttgct tttctctggc tt 172

<210> 524
 <211> 471
 <212> DNA
 <213> Homo sapien

<400> 524
 ccagacctgc agaaaaactt agcacagctc aatctgctgt tttgatggct acagggttta 60
 tttgggtcaag atactcactt gtaactattc caaaaaattg gagtctgttt gctgttaatt 120
 tctttgtggg ggcagcagga gcctctcagc tttttcgat ttggagatat aaccaagaac 180
 taaaagctaa agcacacaaa taaaagagtt cctgatcacc tgaacaatct agatgtggac 240
 aaaaccattg ggacctagtt tattatttgg ttattgataa agcaaagcta actgtgtgtt 300
 tagaaggcac tgtaactggt agctagttct tgattcaata agaaaaatgc agcaaacttt 360
 taataacagt ctctctacat gacttaagga acttatctat ggatattagt aacatttttc 420
 taccatttgt ccgtaataaa ccatacttgc tcaaaaaaaa aaaaaacctt c 471

<210> 525
 <211> 332
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_featur
 <222> (1)... (332)
 <223> n = A,T,C or G

173

<400> 525
 ccccnctgta ttccagcctg ggtgacccca tctcanggaa gaaaagttac cagatgtcgn 60
 gggtaaaggt tggctttcaa gtggcctcat aagttgtctt gcattttaa tccaggaatt 120
 cattggacca ataggttaca ttttcgttcc ttttttgttt tggttcatct gtttaagcagt 180
 gggggcctaa ttactgtctc tttgtaaaaa cacattttcc caaagaacac tgaattaccg 240
 ttcaaactgg ttgttgatgg gtaataagggt ctgtttttgc tgcccaaaaa gggcttaaca 300
 atttaggcgg atagtttact taaaaaaaaa aa 332

<210> 526
 <211> 440
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(440)
 <223> n = A,T,C or G

<400> 526
 ccaggttacc tcccctaaca gatgtggtgt tctganggggt tggttaagtg cccgaggaaa 60
 ataggcctta actgtttaaca tctacagaga agaaagcatg gtcacactgg caaggagtaa 120
 gaagggattg ggtaaaaagaa aatgggagag aaaagggaaa aaagttttgg caagacaatt 180
 gttccctgct aagaagctgc agggtgaaaag ctttcctttc ttctattttt gtttttaagt 240
 nctgtctctc tgatcagngg aaaagtgaaa atttctagta tctagcacta acgtatgacc 300
 caactttgag ggatcacaag ctagaacaag ttgaggattt aaaatcctgg ataattatat 360
 acttaaagtt catgagcata aagctcactt gaccatgcag aaatgctggg aagcagggtg 420
 catggcatgg gaatacatct 440

<210> 527
 <211> 124
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(124)
 <223> n = A,T,C or G

<400> 527
 tttccatatg tctgttgggt gcataaatgn cttcttctga gaagtgtctg ttcctatcct 60
 ttgccccctt tttgaggact taaatgttag acctaagacc ataaaaacc tagaagaaaa 120
 ccta 124

<210> 528
 <211> 162
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(162)
 <223> n = A,T,C or G

<400> 528

174

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ctgcgggaga aatatgggga caagatgttg cgcangcaga aaggtagacc acaagtctat    60
gaagaacttt tcagttactc ctgccccaaag ttcctgtcgc ctgtagtgcc caactatgat    120
aatgtgcacc ccaactacca caaagagccc ttcctgcagc ag                                162

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<210> 529

<211> 409

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(409)

<223> n = A,T,C or G

<400> 529

```

cctttaaaat atagcttata aaatgtatac tatnngccag gagagctcac atttttctgc    60
agttttccag tggacctgcc tatggaatac tgtaaagaaa aatctgcaaa aatattccta    120
gcaattgaat cagtgtcttt aaataaaaga agtggagagg ggcttggtta aattattctg    180
acaagttttc ttgctagtgg ttgccaaaat taaggatatt tgaagtgtcc tatcacccaa    240
atttggtctt aagaaaaagc tatattctgn gtctataggg tgaagccac actatctgtg    300
ctgcattctc aatgatacaa tacctatctg gaaactttcc tgttttgcc atgggtgcac    360
aaatctaaaa cattttatca caaaaggtag ttgaatttaa atttctttt                    409

```

<210> 530

<211> 325

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(325)

<223> n = A,T,C or G

<400> 530

```

ccgccagtgt gatggatata tgcagaattc gccctttcna gatttgngcc cgggcaggtc    60
catggctagg attatagata gttgggtggt tggggnaaat gagtgaggca ggagtcgag    120
gaggttagtt gtggcaataa aaatgattaa ggatactagt ataagagatc aggttcgtcc    180
tttagtggtg tgataggcta tcatttggtt tgaggttagt ttgattagtc attgttggtg    240
ggtaattagt cggtgtgtga tganatattt ggaggtgggg atcaatagag ggggaaatag    300
aatgatcagt actgcggcgg gtagg                                325

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<210> 531

<211> 173

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(173)

<223> n = A,T,C or G

<400> 531

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ccaattgatt tgatggtaag ggagggatcg ttgaccncgt ctgttatgta aaggatgcgt    60
agggatggga gggcgatgag gactaggatg atggcgggca ggatagttca gacggtttct    120
atttcctgag cgtctgagat gttagtatta gttagttttg ttgtgagtgt tag                    173

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<210> 532
 <211> 395
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(395)
 <223> n = A,T,C or G

<400> 532
 caggctcctac tatgggtggt aaatttttta ctctctctac nggggtttttt cctagtgtcc 60
 aaagagctgt tcctcttttg actaacagtt aaatttacaa ggggatttag agggttctgt 120
 gggcaattt aaagttgaac taagattcta tcttggacaa ccagctatca ccaggctcgg 180
 taggtttgtc gcctctacct ataaatcttc ccactatttt gctacataga cgggtgtgct 240
 ctttttagctg ttcttaggta gctcgtctgg ttctgggggt cttagctttg gctctccttg 300
 caaagttatt tctagttaat tcattatgca naaggtagtag gggntagtcc ttgctatatt 360
 atgcttggtt ataatttttc atctttccct tgcgg 395

<210> 533
 <211> 290
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(290)
 <223> n = A,T,C or G

<400> 533
 ctgaaccatt atgggataaa ctggtgcaaa ttctttgcct tctctacttc tcaactgattg 60
 aacataagct tccagggctc ccctgaaaac caaatgaaa acaatgtcaa aatattagat 120
 aaatcacata aaacagttta ggggatacca atatataaaa attattaggt aagctcattt 180
 ctggaactgt taatgctcgg ttccacaatc caagnngacc aacagccttc actcagntac 240
 tggnaagtnt actatggtta ctacngntac tacctttagt gtnaaaaact 290

<210> 534
 <211> 334
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(334)
 <223> n = A,T,C or G

<400> 534
 ccgccagtgt gatggatatt tgcagaattc gcccttagcg agnnagccgg gcagggtccat 60
 ggctagggtt atagatagtt ggggtggttg tggggnatga gtgaggcagg agtccgagga 120
 ggttantttg tggcaataaa aatgattaag gatactagta taagagatca gggtcgtcct 180
 ttagtggttc gtatggctat catttgtttt gagggtagnt tgattagnca ttggtggng 240
 gtaattantc ggctgttgat ganatatttg gaggtgggga tcaatanagg gggaaatana 300
 atgatcagtn ctgcggcngg tnnacctcn gcc 334

<210> 535
<211> 557
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(557)
<223> n = A,T,C or G

<400> 535
nccataagct tcagtgcgca aaaggtcaag gccagtggtta atttgttatt tcttaaataa 60
ctttcccttt cattttttaa ttataaattt aacttctaac atgttttatg gttaaaattg 120
tacttttttc ctttagcgac attcaaatgc atcacaatca ctttgtgaaa ttgttcgcct 180
gagcagagac cagatgttac aaattcagaa cagtacagag cccgaccccc tgcttgccac 240
tctagaaaag tatgtgtaaa actctgttct tgttcttctt tcatattgat gctgttccat 300
gtgtttaccat tgtgagtggt tggtaagtgt tccttatgtg ggaatcatgt gccttgaaaa 360
taaccttggg tgggtgagaa ggtagggaaa cctgcttctt ttatctcaag taaaagtttt 420
ggcagggtaa agaagataaa tgacatttat atctagactt ttgagttttc caattatttg 480
gtaaaaatgg gaaattctgt agaagccctt ccttaaaaaa gggggaagtc catttnanaa 540
aattaactgg taggtca 557

<210> 536
<211> 372
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(372)
<223> n = A,T,C or G

<400> 536
gttccaacct tcatttctga aactgttcta gagcacngtg tctttctcgt agttcataac 60
ttacccttct agtctagaat tagaattaca ttatctgttt tactacttta ctgactgta 120
agctcctaga agataaggac tagggagttc atctctgtat tccaccagaa ggtacagtga 180
ctcatatcta gagtcttttag atgaaactta ctgagttgaa taacttaata tatttctgtt 240
ttcattccca agggaggcca tgtctggaga tagaccttga atttaataaa ttttaggcac 300
tataccattt cagtggagaa aattgttggg aaatttgggg ggatggatat ataaggggga 360
ggaagtcact gg 372

<210> 537
<211> 284
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(284)
<223> n = A,T,C or G

<400> 537
ccttctgatg caaacagaaa ggaaatgttg tttggangcc ttgctagacc tggacatcct 60
atgggaaaat ttttttgggg aaatgctgag acgctcaagc atgagccaag aaagaataat 120
attgatacac atgctagatt gagagaattc tggatgcgtt actactcttc tcattacatg 180

177

acttttagtgg	ttcaatccaa	agaaacactg	gatacttttg	aaaagtgggt	gactgaaatc	240
ttctctcaga	taccaaaaca	tgggttaccc	agaccaaact	ttgg		284

<210> 538
 <211> 293
 <212> DNA
 <213> Homo sapien

<400> 538						
gtacatagta	ggtgtatata	tttatgggct	atataagatg	ttttgatata	ggcatgtaat	60
gtgaaacaag	cacatcaaca	agaatggggg	atccatcccc	taaaacattt	gtcctttggg	120
ctacatgtca	tttcctaata	ttaaagaaaat	ggacagacag	aaccaacatt	gatttgactg	180
gggtgaaaaa	tccatttgag	ttgggagcag	gggttggtgt	cctggatttg	ggttgttagg	240
acagtgtaaa	aaggcttcac	aggggaacat	tcttttctga	taaaggaaa	cag	293

<210> 539
 <211> 468
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(468)
 <223> n = A,T,C or G

<400> 539						
tttcnataaa	ctttattttt	agagcagttt	taagnnggta	gcaaaattga	ttagaaggna	60
cagagatgtc	ccatacacct	cctactccca	cacatgcaca	gccttcccca	ttatcaatag	120
cccccaacag	agggatacat	ttgttaacaa	ctgacgaacc	tacatatcat	tatcacccaa	180
agtcacacag	ttatattatt	ccttctggag	aattttcaaa	tacagaaatt	cctctaccag	240
gaataaacta	ncaatttcct	ctcggctttc	tataaattta	attattattt	cagaaattag	300
cctatcttta	caggagaaaa	tggtataaac	catgaaaaga	ctatcaaata	cacaaggaag	360
tgaatgntat	ataaaaaatg	taccatctcc	taaacaacta	cctgcattcc	cttcttggtg	420
gtaagttata	atttggnata	gttctgatca	tctgtttaat	taatttgc		468

<210> 540
 <211> 397
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(397)
 <223> n = A,T,C or G

<400> 540						
ctgtttttatt	aattccccca	tttgcagcac	acttntctct	tccaacattc	atcagtcaga	60
tcagagtcca	cggctctttc	aaaatttaga	taaactggct	tacattttgt	aatgatgtcc	120
ccagacaaca	ccccactcca	accattctcg	tttgttacta	ttagtttaca	acatgcatgt	180
gcctttactt	tcattttcat	agtatttaaa	aatgggaagg	cactcccaaa	tttactttta	240
cccctttaat	aatctctctc	ctcctgctct	ctctggctct	ccagacaact	gttgatttac	300
tttcctttat	gatggattag	tttgcatttt	ctagaatttt	atatgactga	catataaagn	360
ttttatgttt	ctcccccttg	ggtttcttca	tgtggca			397

<210> 541

178

<211> 248
 <212> DNA
 <213> Homo sapien

<400> 541
 cctagatagg ggattgtgcg gtgtgtgatg ctagggtaga atccgagtat gttggagaaa 60
 taaaatgtgc atagtggggg ttttatttta agtttgttgg ttaggtagtt gaggtctagg 120
 gctgtagaa gtcctaggaa agtgacagcg agggctgtga gttttagggt gagggggatt 180
 gttgtttgga agggggatgc gggggaaatg ttgttagcaa tgagaaatcc tgcgaatagg 240
 cttccggc 248

<210> 542
 <211> 366
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(366)
 <223> n = A,T,C or G

<400> 542
 aatcgccct ctagatgcat gctcgagcgg ccgccagtgt gatggatata tgcagaattc 60
 gcccttgagc gatanccgg gcaggtccaa ttgatttgat ggtaaggag ggatcgttga 120
 ccncgtctgt tatgtaaagg atgcgtagg atgggagggc gatgaggact aggatgatgg 180
 cgggcaggat agttcagacg gtttctattt cctgagcgtc tgagatgtta gtattagtta 240
 gttttgttgt gagtgttagg aaaagggcac acaggactag gaagcagata aggaaaatga 300
 ctatgagggc gtgatcatga aaggtgataa gctcttctat gataggggaa gtagcgtctt 360
 gtanac 366

<210> 543
 <211> 460
 <212> DNA
 <213> Homo sapien

<400> 543
 cctactatgg gtgttaaatt ttttactctc tctacaaggt tttttcctag tgtccaaaga 60
 gctgttcctc tttggactaa cagttaaatt tacaagggga tttagagggt tctgtgggca 120
 aatttaaagt tgaactaaga ttctatcttg ggcaaccagc tatcaccagg ctccggtagg 180
 ttgtgcctc tacctataaa tcttccact attttgctac atagacgggt gtgctctttt 240
 agctgttctt aggtagctcg tctggtttcg ggggtcttag ctttggctct ccttgcaaag 300
 ttatttctag ttaattcatt atgcagaagg tataggggtt agtccttgct atattatgct 360
 tgggtataat ttttcatctt tcccttgagg tactatatct attgcgccag gtttcaattt 420
 ctatcgccca tactttattt gggtaaatgg tttggctaag 460

<210> 544
 <211> 116
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(116)
 <223> n = A,T,C or G

<400> 544
ccgccagtgt gatggatatt tgcagaattc gccctttgga gngctngcgc ccgggcaggt 60
ctgtttcagc agctcctcct tcttcttccc gcgangatct cgagccttga tcttgg 116

<210> 545
<211> 380
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(380)
<223> n = A,T,C or G

<400> 545
cgacggatcg atnagctnga tatcgaattc ggacgagcat ggcgtattgc tgcagatatg 60
gattcttcag aatgctccat gacaaatgta ctgacgggaa gncnatctaa aggaggcatt 120
gtnatgagag aaaggtctcg agctccagat aaagagagat acagagttct tgggaattgga 180
gttgacagaaa cagtaagaca atcgattgtg ggggaagcgtt ctttttagaga atctttggcc 240
ttcactccaa agcgttggtc ttcatacaata ataagtagct cgtgccgaat tcctgcagcc 300
cgggggatcc actagttcta gagcggccgc caccgcggag gagctccagc ttttggtccc 360
tttagtgagg gttaatttcg 380

<210> 546
<211> 418
<212> DNA
<213> Homo sapien

<400> 546
ccagggcaat taggcaggag aaggaaataa agggatttca attaggaaaa gaggaagtca 60
aattgtccct gtttgcggat gacatgattg tatatctaga aaacccatt gtctcagccc 120
aaaatctcct taagctgata agcaacttca gcaaagtttc aggatacaaa atcaatgtac 180
aaaaatcaca agcattctta tacaccaata acagaccaac agagagccaa attatgagtg 240
aactcccatt cacaattgct tcagagaata aaatacctgg gaatccaact tacaagggat 300
gtgaaggacc tcttcaagga gaactacaaa ccactgctca aggaaataaa agaggatata 360
aacaaatgga agaacattcc atgctcatgg gtaggaagaa tcaatatcat gaaaatgg 418

<210> 547
<211> 172
<212> DNA
<213> Homo sapien

<400> 547
cctgagggttg ggagaaattt tgtccatttc tttagaacca aaattggcaa ccagagagta 60
tttgatggtt acacaaaata tctagtttcc ctttctagcc taaattgggt tgtttatagc 120
accctctctt ccatttgaga aaaatggtta ggatgctggt gcagggatga gg 172

<210> 548
<211> 367
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(367)

<223> n = A,T,C or G

<400> 548

ggctctgactt	aagagaaaca	atggaaggca	agaggcagta	gaataatata	ttcaaaaagat	60
gcaaaggaaa	aaaacctctc	agccacgaat	tccttatcca	gcaattattt	ttcaaaaatg	120
aaaataacac	aaagacttag	ccagataaac	agaaacatta	actgaagttg	ttgctggcag	180
acctaccata	taaaaataaa	aaactctaaa	aaaattccta	tggctaaaag	caagttacag	240
aagacagtca	cttgaatcca	catttttaaaa	aaagcactga	tatacgtaat	attgacatta	300
taaaagacag	taaaaatgca	tttcttcttt	ataataaatn	gcttattaaa	taacatgtgt	360
ataatgg						367

<210> 549

<211> 418

<212> DNA

<213> Homo sapien

<400> 549

ccaaatcaga	acctagagtg	agcattctat	aaactcacct	ttgctttgat	ccttgaagat	60
cacaagtttt	gatactgttg	aaatctctac	tctttcaaca	ctttaattaa	atggcattta	120
gaatttcata	tacttctgtt	gttgtttcca	caatcttaaa	ctggatttag	aaatacttat	180
aatgtaaatg	caagagcttt	aacttagtaa	ccgtatttcc	tattttttgt	tgtttttctt	240
ttgccagaat	ttctgtttgt	ctacaataaa	gtccagcgaa	atacagtatt	tggttagggt	300
acttgtaaac	ataaaatttt	atcatttgta	gagtttttac	ttaacccttc	tattctctag	360
tctctataat	ctttcaatga	agataaccag	ttacgaatat	ctcctatacc	atattagg	418

<210> 550

<211> 234

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (234)

<223> n = A,T,C or G

<400> 550

cctacccgcc	gcagnactga	tcattctatt	tccccctcta	ttgatcccca	cctccaaata	60
tctcatcaac	aaccgactaa	ttaccaccca	acactcacia	caaaactaac	taatactaac	120
atctcagacg	ctcaggaaat	agaaaccgtc	tgaactatcc	tgcccgccat	catectagtc	180
ctcategccc	tcccatccct	acgcatecct	tacataacag	acgagggtcaa	cgat	234

<210> 551

<211> 542

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (542)

<223> n = A,T,C or G

<400> 551

caccctacc	ccnntctca	taaaagttnc	tctccctgga	tcctcttttt	ccctcatgag	60
tgcccgggtg	cccaagtcaa	aaacctggga	gtgatataaa	ctccccacac	atccagtcag	120
tcactcatca	actctattga	ttctgtctgc	taaatatatn	tcaattgtat	taacttaaac	180

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atatgcatan ggcactttct tcttcaactgc atttttgtgg gctgcactta cctttcaggt      240
aacgacaaca ctggccccctc ttgcccttct agtcagaagt gccaaaatga tgagagctag      300
ccatgacaaa cccacagcca acattacact gaatgtgcaa aactggaagg gcatccaaac      360
agaggagggg agagaggaat agacaggaag tcaaactgtc tctgtttaca gatgacatgt      420
ttctatatct ataaagcccc atagtcttgg ccccaaagct tcttctgctg ataaacttta      480
gcaaagtctt agcatacaaa atcaatgtgc aaaaattact aacagtccta tacatcaagt      540
ca                                                                                   542

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<210> 552

<211> 411

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(411)

<223> n = A,T,C or G

<400> 552

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cctggntgac aaggagggtgc ctgtnatgtg aagatttgag gaaagagcat tccaggcagg      60
gggaaggctt gatgcaaagg gtctactgca ggcattagct gagcttattt aaagatcaga      120
atgaaggcca ttgtggctag aacagagtgg acaggaaagg atggtaccag gcaaagctga      180
agaagttggc aggattgagc tctcataant catggcaaag agttccattt tcattgtttg      240
acggaaataa attggaaggt cttaaagtag agaagatttg attagattta cattttacga      300
agaagcactc tggatgttat gtgaagaaat ggcctttgca gggcaagggt ggaaacaaag      360
agatcagtta ggaaattatt ggagtagctg aggattggat gaggggatgt g                    411

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<210> 553

<211> 631

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(631)

<223> n = A,T,C or G

<400> 553

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ccgggattag aactaaaaca agtgagatca cccctctaata tatttctgaa cttgggttaat      60
aaaagtttat aagattttta tgaagcagcc actgtatgat attttaagca aatatgttat      120
ttaaaatatt gatccttccc ttggaccacc ttcatgttag ttgggtatta taaataagag      180
atacaaccat gaatatatta tgtttatata aaatcaatct gaacacaatt cataaagatt      240
tctcttttat accttctca ctggccccct ccacctgccc atagtcacca aattctgttt      300
taaatcaatg acctaaagatc aacaatgaag tattttataa atgtatttat gctgctagac      360
tgtgggtcaa atgtttccat tttcaaatta ttranaattc ttatgagttt aaaatttgta      420
aattttctaaa tccaatcatg taaaatgaaa ctggtgctcc attggagtag tctccacct      480
aaatatcaag atggctatat gctaaaaaga gaaaatatgg tcaagtctaa aatggctaata      540
tgctctatga tgctattatc atagactaac gacntttatc ttcaaaacac caaattgtct      600
ttagaaaaat taatgtgatt acaggtagag g                    631

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<210> 554

<211> 558

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(558)

<223> n = A,T,C or G

<400> 554

ccaggntagt	ctccaactcc	tgaccttagc	tgatccaccc	acctcggcct	cccaaagtgc	60
tgggattaca	ggcatgagcc	actgcgccc	gccaaacttg	atatgcattt	ttaaataagt	120
taatacatta	ttcattggtt	agtctcatta	tatatcttat	ggccactttt	gaaatttcat	180
ctaaccacaaa	tcattcttcat	cctgcaattt	gaggtttgga	cacaatgggg	attgatcagt	240
aattttcttca	tatgcccttt	ctcaaggaaa	tagtttccta	tgaaaaaaaa	gtcctatgtt	300
ttcatgtaag	ttctcttttt	ggagaagaaa	aggagacatt	cttacttagc	actctcagtt	360
ttacaaaacg	ctgccaacct	taaaatttgt	ctattgattc	ccaaggcaca	caaccaatag	420
tctgtcaata	acccggaata	acatttcttt	aaggccccag	taactttcac	atgtttgggt	480
tccaatcctc	acctagaatc	ttgttaagaa	aagtaaacca	ttcactcctc	tagaaactct	540
aaggttgctt	cttagggg					558

<210> 555

<211> 212

<212> DNA

<213> Homo sapien

<400> 555

ccagggtattt	gcataatggc	ttttcttctg	ttgcctttgt	tcctttgtgg	ccccagctaa	60
ttgcctgaga	gtgccactgt	tagttttcaa	ctctttctga	tagaaaccct	gtgtactaac	120
atggaaatct	taggtaatct	gctttttcaa	agcacaatgc	agaatttatt	ggcgggtggtg	180
taactttaag	aatatccgag	aagccaccaa	gg			212

<210> 556

<211> 219

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(219)

<223> n = A,T,C or G

<400> 556

ccatgtgtct	atctggagag	aaggggaaac	agcaagtgca	aaggccctga	gatggaacat	60
atctggagaa	ttcgaagaat	ggtaagaagg	ccagagtgga	gcagaacaag	tgtgggagag	120
agttgtagga	gatgagatca	aaggctagga	atgaagtgtg	aggccatgtc	atgtgacctt	180
gtatgtcctt	gtaaggcttt	tttttttttt	tttnancct			219

<210> 557

<211> 482

<212> DNA

<213> Homo sapien

<400> 557

cctactatgg	gtgttaaatt	ttttactctc	tctacaaggt	tttttcctag	tgtccaaaga	60
gctgttcctc	tttggactaa	cagttaaatt	tacaagggga	tttagagggt	tctgtgggca	120
aatttaaagt	tgaactaaga	ttctatcttg	gacaaccagc	tatcaccagg	ctcggtaggt	180
ttgtcgccctc	tacctataaa	ctttccact	attttgttac	atagacgggt	gtgctctttt	240
agctgttctt	aggtagctcg	tctggtttcg	ggggctcttag	ctttggctct	ccttgcaaaag	300

ttattttctag	ttaattcatt	atgcagaagg	tataggggtt	agtccttgct	atattatgct	360
tggttataat	ttttcatctt	tcccttgcg	tactatatct	attgcgccag	gtttcaattt	420
ccatcgccta	tactttattt	gggtaaatgg	tttggttaag	gttgtctggt	agtaagggtg	480
ag						482

<210> 558

<211> 679

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(679)

<223> n = A,T,C or G

<400> 558

ctgtnaaaat	tctgaaccta	tccccaaaag	aaaaaccgtg	aaatacaagt	tttaggaggt	60
ggagcaaaga	aaagccaagt	tatttaaaac	caataaacac	aagagacaat	tctgctggag	120
aattttacttt	ctccaaaaca	tcaaatggac	tttaaagcag	aagaccacat	tttatgagaa	180
agtttatgtca	ctgaaaagct	tcatgtaaag	tgactttgta	aatggaatat	ttttaaata	240
taaaaagaaa	ataacttttc	caggaaatcct	ttggagaggc	tgataaccag	atattaaatt	300
atcaattttg	ccaaagtgga	cttttaaaaa	atgtgttact	tttaaaaact	aacttgaaag	360
aattttatgag	gcaatctatc	tgagtatggt	tattgttgct	ccattggctt	tcaggatttt	420
ggtcattttca	ctgttaactc	ttacatcaga	gaataaagaa	aagaaaatga	aactttgtta	480
ggaactggga	tggaaaatgt	agtcccagac	agatctactg	acctcgactg	agtttcagaa	540
atatcccagg	attttggtta	ttcatgcctt	tcttttggtga	ctttctttca	aattagccaa	600
ttaaagatac	cccttcaatc	accggtgaca	tcagtacaac	agtttttcaa	cagttttctc	660
tctcctgacc	aaacagttt					679

<210> 559

<211> 488

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(488)

<223> n = A,T,C or G

<400> 559

ccccactgta	ctccagcctg	ggtgaccca	tctcaaagaa	gaaaagttac	cagatgtcat	60
gggtaaaggt	tggctcttaa	gtggcctcat	aagttgtctt	gcattttaa	tcaggaatt	120
cattggacca	atagggttaca	tttctgttcc	ttttttgtt	tggttcatct	gttaagcagt	180
gggggcctaa	ttactgctcc	tttgtaaaaa	cacattttcc	caaagaacac	tgaattaccg	240
ttcaaactgg	ttgttgatgg	gtaacaaggg	ctgtttttgc	tgccccaaaa	gggcttaaca	300
atthaggcgg	atagtttact	taaaaaaaaa	aatcctttgg	agacatactg	aaaatgcaaa	360
ctagtttcta	aattatcaat	tccctacatg	aanaagcagt	ttgccanagt	ttagtctcan	420
aaaatgactg	gttggtctcta	tttaaatcan	aacccaattt	ctacgcacct	gcccgcgccg	480
ccaagggc						488

<210> 560

<211> 602

<212> DNA

<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(602)
<223> n = A,T,C or G

<400> 560
cctanttaag aattccttgc cttagtgggtg aacaaggact aaacacagac aatgggtgaa 60
acacagacgc taattcacat aacagagagt aggcaacctt aagaatgaat tgatgcagac 120
tcctatagaa ttcctctgtt atgactgggt tcttattttc tcctccttgt atgtagtga 180
aatttcacat ttatgaatag ttccttggat ctttttttaa agttgtgaat gcgagtgtt 240
ggctttgtaa tacaactttt tagtatccag aagataacca gtgctctacc aataaagatc 300
ttttgataca aaggggtttta acttctgcca gttcttactc atttttttca gggtttttat 360
acattttctta aacaacacat acattatgta aaatataaga attaatgtac attctcaagg 420
ccagattcag tgacaaaatg cactaccgga atctagtaac acatttactc cttgctgcat 480
ataagtggcg tgtaagaaat acaggtata ttgttttgtg atccatgcag taaatgttca 540
caaatatcag gcaaacaact agacgntctt cagctactaa aattaactgt cccagtcaca 600
aa 602

<210> 561
<211> 683
<212> DNA
<213> Homo sapien

<400> 561
gtctattttt aaaaagaaag aaaaaaacca cttttttata gtccctagct ttgccatag 60
ccgccttaa gtggaaggaa agttaatcac ttaactatgt tttataaaaa gaaaaaagg 120
cttggaatgc tattactgtt cacacaaagt atgattctgt ttgaataagg caaatgctcc 180
tttttttaaa aaaagacatt actgtaatat caaaaaccgt ggcagtttgt atacaactct 240
gggcttgatt ttttttaaaa aaacagaatg aattgatgtc ttattttata aatgttctat 300
atttattagg agaaaacttt atattgcctt ttttatcaat catgtaacag gcttatagct 360
ttccaacaga gctgcttgcc aaacaatttt ttttgttat taaacagtgc tgaaacaaac 420
aggatcagca ttacttaag atgttaagaa tgaggacttt taatcagccg aaccaagata 480
ttgttacctg tatgcattcc caaagtctag atgctcagta tgttcagtca tatctttcag 540
aatcagtgaa ccgattaccc tttttttggg attcactcta catctgccaa cctagttcac 600
cttggttttg tgtctgctgt agaaggggaa cataacttgg ttaaaccgta gggattatca 660
ttgtatacat gctgtgaaca tgt 683

<210> 562
<211> 420
<212> DNA
<213> Homo sapien

<400> 562
gcactttttt tccagtaagg attcatctct tgctctccta tatggtcatt atattttata 60
ttttacatat ttataaacat gacatatgta tttatgttcc acaaagggtt ttgaatagaa 120
tttacacata gagttccctg ggttgatgtg tttatcaaaa tggaagataa agtgaattaa 180
ttactttaat atttaacact attgaataga aataatttcc ccaatattgc ttcattgatt 240
agacagtcta ttaaatgttt aagcaaggca ctagactaag tttattaaga caaattttgg 300
aatatgtgca gaaatatgac ctggctaata gtacagagtc aaagctgggt gaatgggtgt 360
atatagtgga ttcagattga tgtggcagtg gtggttacac taggggcact aagggtatcc 420

<210> 563
<211> 482
<212> DNA
<213> Homo sapien

<400> 563
 ctccacctta ctaccagaca accttagcca aaccatttac ccaaataaag tataggcgat 60
 agaaattgaa acctggcgca atagatatag taccgcaagg gaaagatgaa aaattataac 120
 caagcataat atagcaagga ctaaccctta taccttctgc ataatgaatt aactagaaat 180
 aactttgcaa ggagagccaa agctaagacc cccgaaacca gacgagctac ctaagaacag 240
 ctaaaagagc acacccgtct atgtagcaaa atagtgggaa gatttatagg tagaggcgac 300
 aaacctaccg ggcctggtga tagctggttg tccaagatag aatcttagtt caactttaac 360
 tttgcccaca gaacctcta aatccccttg taaatttaac tgtagtcca aagaggaaca 420
 gctctttgga cactaggaaa aaaccttgta gagagagtaa aaaatttaac acccatagta 480
 gg 482

<210> 564
 <211> 302
 <212> DNA
 <213> Homo sapien

<400> 564
 ctggaagtga aggtactaat atacaaatgg ctcttgtttc tgaatatgtg atataatttg 60
 tgaatctttg gaaactgaat tttttctatg gagtgc aaat atagaagggt tattttacaa 120
 tgtttggttg gaaaagaatt cactttgtaa acaactatta aggctggaag tttagtgaag 180
 gtgcatagtt ttgaaagcta cacagggtgaa aaatcaaact tattgtttgt aattttgctg 240
 ttacatgtta agttactttg acagcaattt tctaagtata atgtgattta tgatttaaaa 300
 gg 302

<210> 565
 <211> 554
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)... (554)
 <223> n = A,T,C or G

<400> 565
 ccanngtgac atcatggcaa tacagcaaga attctgnnat ttatttagaa gcctcaagga 60
 gaaggatcct ggagcccctg aatgagagtt tcttctccat gcctctcccc agtcaaaata 120
 catggaaata ttcatagaag cattgtaccc agcatgataa ggaaggatgg agaatggttc 180
 cttatatctc tgttcacaag acatcaacac tcttaagtaa ctgtatgaaa taaattctct 240
 gctgaaagca aataaaccat ctgaaaggtc ttctggttac ttacacagat ttccatagaga 300
 atctgaaatc agcctaacag ggaagattaa tttttaaatg aatccaagtt aatgaaagca 360
 aagaactctt atacagaaat acattttcct attataaagc aggactacct tccctaattt 420
 ctgatagacc taggacaatt tgaatgggca ttgaaattct tttggttgaa ttacgcaaac 480
 aagcaaagga aaagtctcaa ttattattgg aaaatttggg gagagattat tatctcttga 540
 tctcctagtn natt 554

<210> 566
 <211> 631
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)... (631)

<223> n = A,T,C or G

<400> 566

ncgaagctgt	gaannccattc	acacggaatc	tgganggtat	tactgtaact	tcttataata	60
cataatataa	aagtttttga	aagatataga	cacaattaac	ccctaaacaa	cacactatct	120
gatttctcaa	agcaatggct	atttaacaag	atgtaaaagg	acaataacat	atcaaagaac	180
tttcacacac	ctaaagatag	catttagcag	caagttagtc	agacaaaaca	aacataaata	240
tcttcacatt	tcctatgttt	gtttttaact	ttacttcata	aagccactga	taattgaggt	300
ttctttcaag	tataagattt	ctaaaattaa	aaactgtttt	tgacatatct	ttataaagaa	360
ataaaaagca	aaacgcaatc	caactattta	tatgagtccc	tcttctccaa	cagctttaga	420
tgtttttctg	agtacttttt	acacagaata	tttttattaa	aatcagttct	aattcattta	480
tgcagattag	gggaaaatga	ttcataataa	attaacttta	aaattacctt	ctatctgctt	540
ctacctctat	ccccccatca	ccaccaaatc	tgttgctaca	gtgaactgta	gccaatgtct	600
gtttgagggg	gcccaaagca	tctggtaatc	t			631

<210> 567

<211> 510

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(510)

<223> n = A,T,C or G

<400> 567

cctatnatag	cttctctagc	tatcatactc	caatcagcna	aaaatgagaa	aatgttgaga	60
aatagaagat	aattcctcat	ttaaggncac	cttctanaat	ttgtgcttaa	nantctgttt	120
tcttctcatg	ggccagcact	tcggcaactg	ggaaaaatta	ngngtacagg	gatctaggna	180
atactgttta	tttgagcaat	aatatattgn	gctaacgttc	aggcatccta	ttactgagaa	240
ataagggaaa	atgagtgtaa	agtacaacta	agagtctcgg	ctacagggaa	aaataccatc	300
agttaaatat	ccatagtcct	agagcattta	tgtaaaactg	caatttgaat	cctgcaatac	360
atthttggctt	tttctcagc	gataccatgt	gtgggaagtt	gttctgtcaa	gggtgggtcgg	420
ataatttgcc	ctggaaagga	cggatagtga	ctttcctgac	atgtaaaaca	tttgatcctg	480
aagacacaag	tcaagaaata	ggcatggtgg				510

<210> 568

<211> 180

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(180)

<223> n = A,T,C or G

<400> 568

ttaatntgac	ncacgcttat	gcggaggaga	atgnnttcat	gttacttata	ctaacattag	60
ttctttctata	gggtgataga	ttggtccaat	tggtgtgag	gagttcagtt	atatgtttgg	120
gatttttttag	gtagtgggtg	ttgagcttga	acgctttctt	aattgggtggc	tgcttttagg	180

<210> 569

<211> 237

<212> DNA

<213> Homo sapien

<400> 569

ccaattgatt	tgatggtaag	ggagggatcg	ttgacctcgt	ctgttatgta	aaggatgcgt	60
agggatggga	gggcgatgag	gactaggatg	atggcgggca	ggatagttca	gacggtttct	120
atttcctgag	cgtctgagat	gtagtatta	gtagttttg	ttgtgagtgt	caggaaaagg	180
gcatacagga	ctaggaagca	gataaggaaa	atgactatga	gggcgtgatc	atgaaag	237

<210> 570

<211> 352

<212> DNA

<213> Homo sapien

<400> 570

ctgtctctcc	atttagagcc	ccagttgggtc	ctgacctctt	acaaatttgg	tgttttcact	60
ttgatgttta	tgaaccgatt	gcattaaaaa	tgcaggataa	tgattcaggg	ttagagaaac	120
tattatttat	acaaatgtgg	ttaacacctc	atcattttta	attggctgtg	ctaataatgc	180
tcattgtgct	cttcaggggt	atgtgtgtgt	gtgtgtgtgt	gttttgctg	aatctgcaac	240
ctacatttgc	tctggcagta	tgttgagtat	atgctagaat	agaatggacc	taggcaactc	300
taaggtccta	caactaaata	cacttactta	ggaaacctcc	taaataagta	gg	352

<210> 571

<211> 402

<212> DNA

<213> Homo sapien

<400> 571

ctgattttta	caataactac	tgtgttcctg	gcaatagtgt	gttctgatta	gaaatgacca	60
atattatact	aagaaaagat	acgactttat	tttctggtag	atagaaataa	atagctatat	120
ccatgtactg	tagtttttct	tcaacatcaa	tgttcattgt	aatgttactg	atcatgcatt	180
gttgaggtgg	tctgaatggt	ctgacattaa	cagttttcca	tgaaaacgtt	ttattgtgtt	240
tttaatttat	ttattaagat	ggattctcag	atatttata	ttttatttta	tttgtttcta	300
ccttgaggtc	ttttgacatg	tggaaagtga	atttgaatga	aaaatttaag	cattgtttgc	360
ttattgttcc	aagacattgt	caataaaaagc	atttaagttg	aa		402

<210> 572

<211> 70

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(70)

<223> n = A,T,C or G

<400> 572

tgatccgag	ctcggtagca	agcttggcgt	aatcatgggtc	atagctgttt	cctgtgntcg	60
ttttacaacg						70

<210> 573

<211> 423

<212> DNA

<213> Homo sapien

<400> 573

ccaatggttt	cttagtgaaa	gagtacacta	gctctgaatg	caatgccctc	agaaagatat	60
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188

cattcataga	gacatacaaa	gcacatggca	acatgacatt	ggaatacacg	attctgagca	120
tcttcattca	tgaccaacct	ggctatagat	ttcagatgtc	ctcttggtc	gaaggatatac	180
tgggatatacc	atgctcactt	gcattccttt	ccctttaatt	tcattttcta	agtccttctt	240
gtattgtttc	taaaagaaca	gaaaataatc	ttggagcttt	gcttaagctt	taatagcgat	300
gttgaaattt	acatgtttga	atctcaaagc	cacccatgtg	gaaagaaaac	ttatgctctt	360
tccagctatg	attcacggca	tttattttaa	actttgtatc	ttgctgctgt	cttacctggc	420
tgg						423

<210> 574

<211> 129

<212> DNA

<213> Homo sapien

<400> 574

ctgttaaaag	aacaaactta	gcaatatata	acagtttgct	aacaggattt	ttgactattc	60
actttgcgag	ttatttttaa	aatccactt	ttttactgag	tcttactaca	taccaggcac	120
tgtacttgg						129

<210> 575

<211> 684

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(684)

<223> n = A,T,C or G

<400> 575

ccagatntga	cttttcaaaa	ctactcacat	tgtgaaaaan	gcaggaacaa	atctagtttc	60
aagttcagca	tgccgttccc	tgtttaattc	ataaaacaca	actggcagaa	gtattacttg	120
aagcaaaaaca	aaagtaacgt	gggaacttgc	ttatttgcta	agccacaatg	tatttttcca	180
ggaatagcat	aaatttgcca	tctttcttgt	gtctatggaa	aaggggttta	gaattgtttc	240
actaaaaatt	aaatttctat	attgtcaaac	atgattgtat	actcaaattt	taaaatgtga	300
agggaaacact	tactaagcat	ttcctgggta	tgccactata	ttaagtccta	gtaatatgat	360
atagttttatt	tcaatttttt	ttcaactcat	acttccttta	aaatagcact	gaccaaaga	420
aagttaacat	gagcttcatg	tacaattttt	aatctttttg	cagaaaaata	aactgagaaa	480
ggctaaaatt	gtttttattta	agccactata	ccaagacata	ttgatttcac	caatataaaa	540
attgagatag	tttacatttt	ttggtacatc	tttaaaatct	ggtatgtatt	tttatactga	600
cagcacatct	caatttggac	aagctacatt	tccagggtctc	aatagtcacc	atgaatctca	660
attgtaatca	aagagggttg	cctg				684

<210> 576

<211> 134

<212> DNA

<213> Homo sapien

<400> 576

ccttattttct	cttgtccttt	cgtacagggg	ggaatttgaa	gtagatagaa	accgacctgg	60
attactccgg	tctgaactca	gatacagtag	gactttaatc	gttgaacaaa	cgaaccttta	120
atagcggctg	cacc					134

<210> 577

<211> 133

<212> DNA

189

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(133)

<223> n = A,T,C or G

<400> 577

ctgtctctcc	attnagaagc	cccantnggt	cctnacctct	tacaaatttg	gtgttttcac	60
tttgatgttt	atgaaccgat	tgcatataaa	atgcaggata	atgattcagg	gttaganaaa	120
ctattattta	tac					133

<210> 578

<211> 200

<212> DNA

<213> Homo sapien

<400> 578

cctcaaactc	atcttcaaag	gtgacccagc	aatcagtgtc	aatgccttta	ctgtagttaa	60
cctggtaatt	tcattcttta	gtctctccaa	gaaaatctga	agtgtattag	gcaagtcaga	120
acccaaattg	tctccaagg	tgcaaataat	ttgtcccata	caggaaatag	ccctttcctt	180
gacttcctga	tcaatgtcag					200

<210> 579

<211> 402

<212> DNA

<213> Homo sapien

<400> 579

ctgattttta	caataactac	tgtgttcctg	gcaatagtgt	gttctgatta	gaaatgacca	60
atattatact	aagaaaagat	acgactttat	tttctggtag	atagaaataa	atagctatat	120
ccatgtactg	tagtttttct	tcaacatcaa	tgttcattgt	aatgttactg	atcatgcatt	180
gttgaggtgg	tctgaatgtt	ctgacattaa	cagttttcca	tgaaaacgtt	ttattgtgtt	240
tttaatttat	ttattaagat	ggattctcag	atatttatat	ttttatttta	tttgtttcta	300
ccttgaggtc	ttttgacatg	tggaaagtga	atttgaatga	aaaatttaag	cattgtttgc	360
ttattgttcc	aagacattgt	caataaaagc	atttaagttg	aa		402

<210> 580

<211> 245

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(245)

<223> n = A,T,C or G

<400> 580

ccaattgatt	tgatggtaag	ggagggatcg	ttgacctcgt	ctgttatgta	aaggatgcgt	60
agggatggga	gggcgatgan	gactaagatg	atggcgggca	ggatagtcca	gacngtttct	120
atctcctgag	cgtctgagat	gttagtatta	gttagttttg	ttgtgagtg	taggaaaagg	180
gcatacagga	ctaggaagca	gataaagaaa	atgactntta	gggcgtgatc	atnaaanggg	240
ataaa						245

<210> 581

<211> 294
 <212> DNA
 <213> Homo sapien

<400> 581
 tgcagcgcaa gtaggtctac aagacgctac ttcccctatc atagaagagc ttatcacctt 60
 tcatgatcac gccctcatag tcattttcct tatctgcttc ctagtctgt atgccctttt 120
 cctaacactc acaacaaaac taactaatac taacatctca gacgctcagg aaatagaaac 180
 cgtctgaact atcctgcccg ccatcatcct agtcctcatc gccctcccat ccctacgcat 240
 cctttacata acagacgagg tcaacgatcc ctcccttacc atcaaatcaa ttgg 294

<210> 582
 <211> 230
 <212> DNA
 <213> Homo sapien

<400> 582
 gaggtcgccc tcatagtcac ttcccttacc tgcttccctag tcctgtatgc ccttttccta 60
 acactcacia caaaactaac taatactaac atctcagacg ctcaggaaat agaaaccgtc 120
 tgaactatcc tgcccgccat catcctagtc ctcctcgccc tcccatccct acgcatcctt 180
 tacataacag acgaggtcaa cgatccctcc cttaccatca aatcaattgg 230

<210> 583
 <211> 481
 <212> DNA
 <213> Homo sapien

<400> 583
 ccaagggtgt tctgcctgcc tcagcctccc aaagtgtctg gattacaggt gtgagccact 60
 gtgcctgacc acaggaaaac ttatttaaag gagagatttg actcgaaaaga tcccgttttt 120
 ttaaggctct tagttcttaa aagcggcaca taatagaatt agtataatcc caaataaatt 180
 ttcagtagat ttttggtgta acttgagaag atgattctgt catttttagt gacaatttaa 240
 aagacctgaa attgtctaca gccatagaaa gtgaactact gatagttgtt tctgtaaagt 300
 tttattggaa cacaaccaca cctatttggt catctgtatt gtctttgggt actttgtgca 360
 gagaccatgg ccacaaaacc taaaacattc actttctagc tctttaagaa ataattggcc 420
 cactgacacc ctggtcttaa ggtctagacc aattatttct caagagtatt agctgaatca 480
 g 481

<210> 584
 <211> 306
 <212> DNA
 <213> Homo sapien

<400> 584
 ccaattaaga gctaaattta caaaataatc tctatcagga ggctttaagg tttaatgtct 60
 ctaagtccc tatggatata agaggcttga atgtactgaa ttcaaatttg gtttttaaat 120
 gttataatag tttaggcccc agagccacat atttctgtct aagaatagaa agcatagcta 180
 gctgcccaca cagaatattc atatagaggt ggggggcaag aacaaaattt attcatttga 240
 tacatagaaa tgggactact tagaatagac tcataataga aagcatcatc tggtttctca 300
 tctcag 306

<210> 585
 <211> 308
 <212> DNA
 <213> Homo sapien

<400> 585

ccagaatggt	acagagtgga	gggtgttctg	ctaattgactt	cagagaagta	tttaagaaaa	60
acatagaaaa	acgtgtgctg	agtttgccag	aaatagatgg	cttgagcaaa	gagacgggtgt	120
tgagctcatg	gatagccaaa	tatgatgcca	tttacagagg	tgaagaggac	ttgtgcaaac	180
agccaaatag	aatggcccta	agtgcagtgt	ctgaacttat	tctgagcaag	gaacaactct	240
atgaaatggt	tcagcagatt	ctgggtatta	aaaaactaga	acaccagctc	ctttataatg	300
catgtcag						308

<210> 586

<211> 416

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(416)

<223> n = A,T,C or G

<400> 586

cctgtctttg	aatggatgaa	ataggttaat	aaaaaacatc	actgtttaaa	aactagaaca	60
ctgaaaaatt	ctaggaaagc	ttattttccc	ttatatTTTT	atggnacttt	caacacttna	120
caacactatt	tnaattaann	ttntttctag	agtttatann	atatcagtac	attcttttct	180
gtggatgcaa	taatatagaa	tcttattnca	aatcttactg	gcaggntctn	ttaaattctt	240
caacggntgn	catagtgatt	aaccaaaatt	agttatgatt	tctgcctatc	tgtgtgagaa	300
cttacagggg	aaattgttct	aaacctgagg	aacatgaagt	aactgtactg	cacactccaa	360
atgatgacag	tcattttata	tcaccttcaa	ttaccaaca	gcttttaata	gtctgg	416

<210> 587

<211> 382

<212> DNA

<213> Homo sapien

<400> 587

cctactatgg	gtgttaaatt	ttttactctc	tctacaaggt	tttttcctag	tgtccaaaga	60
gctgttcctc	tttgactaa	cagttaaatt	tacaagggga	tttagagggg	tctgtgggca	120
aatttaaagt	tgaactaaga	ttctatcttg	gacaaccagc	tatcaccagg	ctcggtaggt	180
ttgtgcctc	tacctataaa	tcttcccact	atcttgctac	atagacgggt	gtgctctttt	240
agctgttctt	aggtagctcg	tctggtttcg	ggggtcttag	ctttggctct	ccttgcaaag	300
ttatttctag	ttaattcatt	atgcagaagg	tataggggtt	agtccttgct	atattatgct	360
tggttataat	ttttcatctt	tc				382

<210> 588

<211> 307

<212> DNA

<213> Homo sapien

<400> 588

cctactcttc	tccgtccatt	gtactatctg	cccgtggtgg	ggatggcagt	aggatcatat	60
ttgatgactt	ccgagaagca	tattattggc	ttcgtcataa	tactccagag	gatgcgaagg	120
tcatgtcctg	gtgggattat	ggctatcaga	ttacagctat	ggcaaaccga	acaatttttag	180
tggacaataa	cacatggact	aatacccata	tttctcgagt	agggcaggca	atggcgtcca	240
cagaggaaaa	agcctatgag	atcatgaggg	agctcgatgt	cagctatgtg	ctggtcattt	300
ttggagg						307

<210> 589
 <211> 89
 <212> DNA
 <213> Homo sapien

<400> 589
 cctgggtgat tgaggatgca atgagctgtg attgtgccac cacactccag cctgggcaat 60
 acagcaagac tgtctcaaaa aaaaaaaaaa 89

<210> 590
 <211> 456
 <212> DNA
 <213> Homo sapien

<400> 590
 cctcagttct tgattgtggt tgacggggcg tcacatgaa ggagcccatt tagtataaag 60
 cttccaacct tttctcttaa tcgtttcttt aatcttttaa accatcttca agtgcataag 120
 ggagtttccg atgccagagg atgaaagcaa gtgctctctc caccctctcc tcccagagt 180
 aaaacaaatc cttttgctga tacttgtttc aaaagcatcc attgtaaagc ttctcagtga 240
 cacaaaatac tgagaggtaa ctttttatca atcaaaccac atacccaat ttaacacctt 300
 tcaatgctct gaattcaact gacagactaa aggggtgttc ctgtaacagt ctgaaatatt 360
 aagtgttttt tttgttttgt ttttaaactc tatttcagaa aacttcctct tggggtagga 420
 aagtacacat gaagcagcaa agtaacgaag aaaaaa 456

<210> 591
 <211> 289
 <212> DNA
 <213> Homo sapien

<400> 591
 ccaattgatt tgatggtaag ggagggatcg ttgacctcgt ctgttatgta aaggatgcgt 60
 agggatggga gggcgatgag gactaggatg atggcgggca ggatagttca gacggtttct 120
 atttcctgag cgtctgagat gttagtatta gttagttttg ttgtgagtgt taggaaaagg 180
 gcatacagga ctaggaagca gataaggaaa atgactatga gggcgtgatc atgaaagggtg 240
 ataagctctt ctatgatagg ggaagtagcg tctttagtag ctacttgcg 289

<210> 592
 <211> 435
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(435)
 <223> n = A,T,C or G

<400> 592
 cgcgtagat gcgccttttc cggcctgtgc gtctgtctct gttcctctca ggcagcaaag 60
 ctgggggaagg aagctcaggc aggagcctcc ccgacaccac agcggcacaa gcagcagcta 120
 aagcacgcga ctttgctctg ctaacctttt acttaaatga ggttttgcca aatccacatc 180
 tggaaccgca tcacacccat ttgcaaggat gtttgttctt tgatgaaact gcactctctac 240
 tgcacatgan ggctttcatt gtaggacaag aggagagttc gtttattttt gtaactgttt 300
 tacatgttcc gattanttaa tcggnagctt atgtcatttg ctatgcctgt tgtcttctaa 360
 tctctcctta ctaaaacatt acttcaaatt tnaattgacc cttgtttata atttatttaa 420
 cgggatttgn gtgtc 435

<210> 593
 <211> 633
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(633)
 <223> n = A,T,C or G

<400> 593
 ctgttttagtc agataattgt gtccgaattg attangaaaa taatagacca gccataaagc 60
 agcataaaat attatgaaac tattccagaa gttcagtaat atcttttgga cctgctcata 120
 gcccaagttt tgtgaatact tttgtagtta aaaaaaattt ttactttacc agggcattgc 180
 aattcttttc catcagtga tttcattcta cagacttttc agagcatctc ataatcagtc 240
 aacaaatcta tttcaaattgt gtttgttact aagcaacggg tgctaagagc ttctgtaatt 300
 aagatgaaag ttccaaggta acaatgccc aacacagcac cattttcacc attttctgat 360
 aatgcaggag taggatggct aaaagtgaag gaagaatcta ctctatggaa agcatggcac 420
 ctgaaatttc tgaagatatt ggctgtcctc tagcttatat gagagagagt gtttgtgctt 480
 tactaatcaa ccagtcattt ttttcttggt tggctgaaat gtacattcca gacatgaaca 540
 ggtagagtat gtgttggggg caggtttata ctgcatgggt gtgctgagac agggccacgt 600
 ggtgatgtaa atgatgctgn ctgacacgtg cag 633

<210> 594
 <211> 501
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(501)
 <223> n = A,T,C or G

<400> 594
 cctttacaag atgctggtac cttgatcttg gacngggcag gctccaagat ggaaagaaag 60
 tgagcatctg ctttttaggg attatccagt ctatactact ctgttctagc cacacaaaac 120
 aggttaagac agaaattggg accaagagtg ggggtgttact acagcaaata cctgaaaatg 180
 tagaagaggc tttgaaatgt ggtaattgga agaagctggg agaatttgga ggagtaggct 240
 agaaaatgtc tgtattttca tgaatggagc attaagaata attccgggtg ggccataggg 300
 aaagtctaaa acttttcaga aattatgtaa gcgattgtga ttagtagggt ggtagaaata 360
 tagacagtaa aagcaattct gatgtggtt cagaggaaaa tgaaaaatat tagaaactga 420
 aggaaggggc atccttgcta taaactggca aagaacttgg ctgaaatgtc tccatgtcca 480
 agagatttat ggcagaaatg t 501

<210> 595
 <211> 383
 <212> DNA
 <213> Homo sapien

<400> 595
 ctggtcacca tcatcccttt aatcaactca cacctgttta aagagtgttt ctgatttgac 60
 cttcatccct tagtttactg gcgttaaaaa aagctctcagc aattttcatt atttctcgtg 120
 ggtctcatta tcaaaccttt acttatttcg gcataattcc tctgggcttc ttctagtttc 180
 tgcccttaca gcaatgctgt tctgtaaatt tattgaaacc tctggaacat ttcaccttta 240

```

gagatggagg atggaaggat tgggtaccaga agaggggctaa gatacgtttt ctgtcttgag      300
ctgaaagcac agtctactct ccttcgtttt gtcgatgaga aagttgaggc cagaggggag      360
gtgacatggt tagagtcacc cag                                     383

```

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<210> 596
<211> 266
<212> DNA
<213> Homo sapien

```

```

<400> 596
ccatggctag gtttatagat agttgggtgg ttggggtaaa tgagtgaggc aggagtccga      60
ggagggttagt tgtggcaata aaaatgatta aggatactag tataagagat cagggttcgtc     120
ctttagtgtt gtgtatggct atcatttggt ttgaggttag ttgattagt cattgttggg      180
tggttaattag tcggttggtg atgagatatt tggaggtggg gatcaataga gggggaaata     240
gaatgatcag tactgcggcg ggtagg                                     266

```

```

<210> 597
<211> 383
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(383)
<223> n = A,T,C or G

```

```

<400> 597
ctggtcacca tcatcccttt aatcaactca cacengttta aagagtgttt ctgatttgac      60
cttcatccct tagtttactg gcgttaaaaa aagtctcagc aattttcatt atttctcgtg     120
gggtctcatta tcaaacccttt acttatttcg gcatatttcc tctgggcttc ttctagtttc     180
tgccttataa gcaatgctgt tctgtaaatt tattgaaacc tctggaacat ttcaccttta     240
gagatggagg atggaaggat tgggtaccaga agaggggctaa gatacgtttt ctgtcttgag     300
ctgaaagcac agtctactct ccttcgtttt gtcgatgaga aagttgaggc cagaggggag     360
gtgacatggt tagagtcacc cag                                     383

```

```

<210> 598
<211> 266
<212> DNA
<213> Homo sapien

```

```

<400> 598
ccatggctag gtttatagat agttgggtgg ttggtgtaaa tgagtgaggc aggagtccga      60
ggagggttagt tgtggcaata aaaatgatta aggatactag tataagagat cagggttcgtc     120
ctttagtgtt gtgtatggct atcatttggt ttgaggttag ttgattagt cattgttggg      180
tggttaattag tcggttggtg atgagatatt tggaggtggg gatcaataga gggggaaata     240
gaatgatcag tactgcggcg ggtagg                                     266

```

```

<210> 599
<211> 294
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(294)

```

<223> n = A,T,C or G

<400> 599

ccaattgatt	tgatggtaag	ggagggatcg	ttgaccacgt	ctgttatgta	aaggatgcgt	60
agggatggga	gggcgatgag	gactaggatg	atggcgggca	ggatagttca	gacggtttct	120
atttcctgag	cgctctgagat	gttagtatta	gttagttttg	ttgtgagtgt	taggaaaagg	180
gcatacagga	ctaggaagca	nataaggaaa	atgactatga	gggcgtgatc	atgaaagggtg	240
ataagctctt	ctatgatagg	ggaagtagcg	tcttgtagac	ctacttgcgc	tgca	294

<210> 600

<211> 213

<212> DNA

<213> Homo sapien

<400> 600

agatattggg	ctgttaattg	tcagtccagt	gttttaattct	gacgcaggct	tatgcggagg	60
agaatgtttt	catgttactt	atactaacat	tagttcttct	atagggtgat	agattgggtcc	120
aattgggtgt	gaggagttca	gttatatgtt	tgggattttt	taggtagtgg	gtgttgagct	180
tgaacgcttt	cttaattggg	ggctgccttt	agg			213

<210> 601

<211> 471

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(471)

<223> n = A,T,C or G

<400> 601

ncctactatg	ggtgttaaat	tttttactct	ctctacaagg	ttttttccta	gtgtccaaaag	60
agctgttcct	ctttggacta	acagttaaat	ttacaagggg	atttagaggg	ttctgtgggc	120
aaattttaaag	ttgaactaag	attctatctt	ggacaaccag	ctatcaccag	gctcggtagg	180
tttgctgcct	ctacctataa	atcttccac	tattttgcta	catagacggg	tgtgctcttt	240
tagctgttct	taggtagctc	gtctggtttc	gggggtctta	gctttggctc	tccttgcaaa	300
gttattttcta	gttaattcat	tatgcagaag	gtataggggt	tagtccttgc	tatattatgc	360
ttggttataa	tttttcatct	ttcccttgcg	gtactatatc	tattgcgcca	ggtttcaatt	420
tctatcgcct	atactttatt	tgggtaaatg	gtttggctaa	ggttgtctgg	t	471

<210> 602

<211> 482

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(482)

<223> n = A,T,C or G

<400> 602

tgagcataca	gcaataaaaa	taacataatt	tntatgtgta	caatatttat	ggaatacgtt	60
actggaacag	ataaataatt	tagttaataa	catgacaaag	aacagaaatt	gtatacacta	120
tacagcatag	taatagaata	atgaatgatt	aaagttatta	atattaggta	gaaaatgaag	180
ggtatctttg	agagcagaac	tcaaggaagc	aagcaatttg	ccttatgagg	aaagagttac	240

196

```

ctgtggataa aggagaaact gaaaaattta caagtcaaga ctttttgagc aaaaacaaaa 300
atatgactat gagtaccaa ttcagtacag tgaaaaaaaaa gttgaagaga tatcttgga 360
gtaaaccatg ttgtggaaga gcagggtttt gataatcatg ggattattct gaatgaattt 420
taaatgcgat aggaatatat gagataattt caccagagaa taatatgatac atgtttgcat 480
tt 482

```

```

<210> 603
<211> 372
<212> DNA
<213> Homo sapien

```

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<400> 603
gttccaacct tcatttctga aactgttcta gagcactttg tctttctcgt agttcataac 60
ttacccttcc agtctagaat tagaattaca ttatctgttt tactacttta ctgactgta 120
agtccttaga agataaggac tagggagttc atctctgtat tccaccagaa ggtacagtga 180
ctcataacta gagtcttttag atgaaactta ctgagttgaa taacttaata ttttctgtt 240
ttcattccca agggaggcca tgtctggaga tagaccttga atttaataaa ttttaggcac 300
tataaccattt cagtggagaa aattgttggg aaatttgggg ggatggatat ataaggggga 360
ggaagtcact gg 372

```

```

<210> 604
<211> 468
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(468)
<223> n = A,T,C or G

```

```

<400> 604
gcngttttga gtgagtttct taatcctgag ttctggnttg attgcactgt ggtctgagag 60
atagtttggt ataatttctg ttcttttaca cttactgagg agagctttac ttccaagtat. 120
gtggtcgatt ttggaatagg tgtggtgtcg tgctgaaaag aatgtatatt ctggtgattt 180
ggggtggaga gttctgtana tgtctattag gtccgcttgg tgcagagttg agttcaattc 240
ctggatagcc ttgttaactt tctgtctcgt tgatctgtct aatgttgaca gtggggtggt 300
aaagtctccc attattattg tgtgggagtc taagtctctt tgtaggtcac taaggacttg 360
ctttatgaat ctgggtgctc ctgcattggg tgcacatata tttaggacag cnagctcttc 420
ttgttgaaat gatcccttta ccattatgta atggccttgn ctcttttg 468

```

```

<210> 605
<211> 288
<212> DNA
<213> Homo sapien

```

```

<400> 605
ccaattgatt tgatggtaag ggagggatcg ttgacctcgt ctgttatgta aaggatgcgt 60
agggatggga gggcgatgag gactaggatg atggcgggca ggatagttca gacgggttct 120
atttcctgag cgtctgagat gttagtatta gttagttttg ttgtgagtgt taggaaaagg 180
gcatacagga ctaggaaagca gataaggaaa atgactatga gggcgtgatc atgaaagggt 240
ataagctctt ctatgatagg ggaagtagcg tcttgtagac ctacttgc 288

```

```

<210> 606
<211> 572
<212> DNA

```

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(572)

<223> n = A,T,C or G

<400> 606

gaatnaaatg	aatgaaatag	aaaatataat	tgagagcttc	aacaacagac	tataccaaat	60
ggaggaaaaa	atttctgaac	ttgaagatag	atcttttgaa	ataacacaag	cagtggcaaa	120
aatgaattaa	aaagaataag	gaaagcctaa	aggatttatg	agatatcatt	aagcaagcaa	180
atattcatat	tatgggcatt	ccagatggaa	aaaagaagg	ttaaaggtag	gaaatcatat	240
ttaatgaaat	aatagcagaa	aatttccgga	gtcttgggag	agagatgagc	atttaggtcc	300
aggagctca	aagaacccca	aacagattca	acccaaacag	gtcctctctg	gagcccaaca	360
tagtcaaatt	gtaataagta	aaagacaaag	aattccaana	agcattcaag	agaaaagagt	420
caagtcataa	ataaggggaat	ctccattagg	ctaacagcag	atatctcagc	agaaagctta	480
cangccanga	gagaatggga	tgatatattc	aaagtacttg	aaagcagggg	tnggggaaac	540
cctgctagct	aaaaatatta	tacccttgca	aa			572

<210> 607

<211> 178

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(178)

<223> n = A,T,C or G

<400> 607

ctcggggtaa	tctcccagca	agaggtcagg	tcctggntgt	gcgtcccagg	gtgtcagtga	60
aattggctgc	tcccctgacc	cagggcacct	tcattgcgtct	tcacagcagg	actactgtga	120
ccaaggccag	acctttcatc	tttcaaaaga	ctttgactaa	aaatgcttta	aaaaagca	178

<210> 608

<211> 416

<212> DNA

<213> Homo sapien

<400> 608

cctgtctttg	aatggatgaa	ataggttaat	aaagaacatc	actgtttaaa	aactagaaca	60
ctgaaaaaatt	ctaggaaaagc	ttattttccc	ttatatatttt	atgggtacttt	caacacttaa	120
taacactatt	tcaattaagt	tttctcctag	agtttatagt	atatcagtag	attcctttct	180
gtggatgcaa	taatatagaa	tcttattcca	aatcttactg	gcaggttctc	ttaaattctt	240
caacggctgt	catagtgatt	aaccaaaatt	agttatgatt	tctgcctatc	tgtgtgagaa	300
cttacagggg	aaattgttct	aaacctgagg	aacatgaagt	aactgtactg	cacactccaa	360
atgatgacag	tcattttata	tcaccttcaa	ttaccaaca	gcttttaata	gtctgg	416

<210> 609

<211> 648

<212> DNA

<213> Homo sapien

<400> 609

ctgatctctc	agcagaaact	cttcaaacca	gaagagagtg	ggggccaata	ttcaacattc	60
------------	------------	------------	------------	------------	------------	----

ttaaagaaaa	taatttttcaa	cccagaattt	catatccagc	caaactaacc	ttcacaagtg	120
aaggagaaat	aaaatccttt	acagacaagc	aaatgctgag	agattttatc	accaccaggc	180
ctaccctaaa	agagttcctg	aaggaagcac	taaacatgga	aaggaacaac	cagtaccatc	240
gaggctagga	agaaaccgca	tcaactaagg	agcaaaataa	ccagctaaca	tcataatgac	300
aggatcagat	tcacacataa	cgatattaac	tttaaagtga	aatggactaa	atgctccaat	360
taaaagacac	agactggcaa	attggataaa	gagtcaagac	ccatcagggg	gctgtattca	420
ggaaacccat	ctcaccgtgc	agagacacac	ataggctcaa	aataaagggc	tggaggaaga	480
tctaccaagc	aaatggaaaa	caaaaaaagg	caggggttgc	aatcctagtc	tctgataaaa	540
cagactttta	accaacaaag	atcagaagag	acaaagaagg	ccattacata	atggtaaagg	600
gatcaattca	acaagaagag	ctaactatcc	taaatatata	ttgcaccc		648

<210> 610

<211> 310

<212> DNA

<213> Homo sapien

<400> 610

ccagctcttc	tctgtcacat	tcctatctt	gacttctgcc	tggctttcag	tttctgcccc	60
accttggtct	tttcccagct	tgaacctaat	agaactccag	agtttggggg	gaggcccagc	120
cctttgtttt	ctgctcttga	agcatattca	cacataaaaa	gttgatttct	cttacacaaa	180
ctgttttgag	gctcttaccg	tagtcgaagg	tatcttagat	cttccttagt	gatctcatta	240
agaatatccg	aaagtgtata	accctcttca	acaatctgaa	acaaagatca	gatccttaag	300
agctgagcag						310

<210> 611

<211> 254

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (254)

<223> n = A,T,C or G

<400> 611

ctgttttttac	atctaaagca	atagactaga	actgaattnt	cttctacata	gtaaaatcac	60
aattgtggaa	ttacaggaat	tctggtgata	ttaaggtgaa	acaacaaaac	acaaaagggc	120
ctatttttaac	agttgatgtg	acagtaagtt	ttaatagaac	ctgtaacttc	attttggaag	180
tgtttctcca	ccaaataagg	cctttttccc	ctatttaagg	agccagatgg	attgaaagat	240
gtggaaatag	gcag					254

<210> 612

<211> 225

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (225)

<223> n = A,T,C or G

<400> 612

ctgactatat	catgtcacca	tcatagccaa	tacaacattn	ttgccatact	tcctaaaaac	60
cttttcgcat	acactgatca	tgctacttat	cagcactttc	taacatcctg	accaaacaga	120
caccacacac	tcttatagag	tacactgtga	gagaataaca	tggacttgat	atggcatcac	180

acttgtttta aagcaaaaaa aaaagaaaaa gaaaagaaaa aaaaa 225

<210> 613

<211> 471

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(471)

<223> n = A,T,C or G

<400> 613

ccatcagact	tcttggtg	ctggctatat	tcaatgtgaa	gtaaaaaata	tcccaagtct	60
tacaccaaaa	tagaggctct	gacttagaag	tatgctttta	gctttctttt	taaataagac	120
attctggaag	aaaaaaaaag	aaaaaggaaa	gaaaatcaag	tttgaaacac	agttaacact	180
tattttggca	agaaagcaac	caaaatctaa	aaagcataaa	ctatgngtcc	aaatgnaaaa	240
ggnattacag	aacaaactgc	aagaggggaa	aattaaagcc	ncactgaacg	aaaaaataca	300
gtatgtctaa	cattttggaa	ttgnaattta	aaccctaagg	gcaaaagctg	aaaaatcatg	360
cttanacctn	gncngngacc	acnctaaggg	cgaattccan	cacactggcg	gncgttacta	420
gtggatccna	nctcgggtacc	aagcttggcg	taatcctngg	catagctgtt	t	471

<210> 614

<211> 421

<212> DNA

<213> Homo sapien

<400> 614

gttatttttt	agaatggctc	tcccatcttg	agtatgtgtg	atgtttcctc	atgtatgaat	60
gaagcatata	catctttgtc	agaagtatcc	cagaagcaat	tctgtactct	cctcattatg	120
ttctattggg	tgggccatgg	tttttgattt	gtctcattac	tgatgatggg	tacttttatt	180
atttgataaa	ggttgatat	aacttatcta	ttatggcata	atacattagc	taaaaccttg	240
gcggtgtaaa	acagcagata	cttacgtttc	tcataggaat	ggctctattg	agtacctctg	300
tctcaaggct	tctcaagagt	ttgtagctac	cttggtggct	ggggttgcgg	tctgacctaa	360
aggcttagtt	aggggggtgg	agaaatcttc	catatgttct	ttgctacgtg	gacctcacag	420
g						421

<210> 615

<211> 242

<212> DNA

<213> Homo sapien

<400> 615

cctcctattt	attctagcca	cctctagcct	agccgtttac	tcaatcctct	gatcaggatg	60
agcatcaaac	tcaaaactacg	ccctgatcgg	cgcactgcga	gcagtagccc	aaacaatctc	120
atatgaagtc	accctagcca	tcattctact	atcaacatta	ctaataagtg	gctcctttta	180
cctctccacc	cttatcacia	cacaagaaca	cctctgatta	ctcctgccat	catgaccctt	240
gg						242

<210> 616

<211> 392

<212> DNA

<213> Homo sapien

<220>

200

<221> misc_feature
 <222> (1)...(392)
 <223> n = A,T,C or G

<400> 616
 cctaatttgt agattgtgaa agcagctttt agtttaactt atttacagac cccttataat 60
 taccatgttt tttttttnt tcctaaatct nttggttcag cttgngaattt ttacgtgccc 120
 gtaaagtngg gatgttgaat nggcccttnt ttgttctggc agngagtcaa gngtccanca 180
 ttttttcata agngtttttt aaaatngttc tccancattt tatggctcct ccctcccatg 240
 tcctcaaacc cagcaaaagc gtanaggcan aattanagga cccncccggt cggccgntaa 300
 gggcnaattc cagcncactg gcggccgtta ctagnngatc cnagctcggn nccaagctng 360
 gcgtaatcat ggnccatagct gtttcctgtg an 392

<210> 617
 <211> 215
 <212> DNA
 <213> Homo sapien

<400> 617
 cctactatgg gtgttaaatt ttttactctc tctacaaggt tttttcctag tgtccaaaga 60
 gctgttcctc tttggactac cagttaaatt tacaagggga ttttagagggt tctgtgggca 120
 aatttaaagt tgaactaaga ttctatcttg gacaaccagc tatcaccagg ctcggtaggt 180
 ttgtgcgctc tacctataaa tcttcccact atttt 215

<210> 618
 <211> 433
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(433)
 <223> n = A,T,C or G

<400> 618
 cttttgtntg cctgttttgt ggactggctg gctctgttag aactctgtcc aaaaagtgca 60
 tggaatataa cttgtaaagc ttcccacaat tgacaatata tatgcatgtg tttaaaccaa 120
 atccagaaag cttaaacaat agagctgcat aatagtattt attaaagaat cacaactgta 180
 aacatgagaa taacttaagg attctagttt agttttttgt aattgcaaatt tatatttttg 240
 ctgctgatat attagaataa tttttaaatg tcatcttgaa atagaaatat gtattttaag 300
 cactcacgca aaggtaaagt aacacgtttt aaatgtgtgt gttgctaatt ttttccataa 360
 gaattgtaaa cattgaactg aacaaattac ccataatgga tttggttaat gacttatgag 420
 caagctgggtt tgg 433

<210> 619
 <211> 259
 <212> DNA
 <213> Homo sapien

<400> 619
 ctgcagtgtc cctttttata tcatgctagt gttgagacat acttgactaa cttgggaaca 60
 gttcgatata ttgacaaccg tcaacttaag aaaatcaaca gcttttggcc ccagcgctcca 120
 agtgaacttt tcatggagtg cagaatctca aatggacaaa atactttgtc tttttaaata 180
 ctgaaaattt aattattagt actatgactg aaagattctt catggctaaa aagctctgca 240
 tcaaactcaa ttcaggagg 259

201

<210> 620
 <211> 393
 <212> DNA
 <213> Homo sapien

<400> 620
 ccaccaaagc cacacggaga ttctgtcagg cgctgagaca ccacagcctt ttcaatctta 60
 gggaaagaaa tcaagtcata taaattaata tcaacaggta aggtcattga gcaattgtct 120
 ttcaactgtc taagacttta tcaacttaaga tcataaacac agaagcaggc cataaaaaata 180
 gcttttctta aggttttagga gaattttagg gggcacttac ttgataatct gaattttcta 240
 gtcagaagtt taaataccac cttttaaaaa cataaaattt aatttgaac aagttattaa 300
 caaagcagta ttgtcgaaag ttttaagctt tctcccaata atttaattac attaatataa 360
 tttttaccat tctaattggtt acaaagtaac cag 393

<210> 621
 <211> 563
 <212> DNA
 <213> Homo sapien

<400> 621
 ctgacaatga taaaattatc tctatatggg caaacgcgtg ctctttgtcg aagaagaaaag 60
 cttcagcttc atgttccagg tgagttaatt aggcaatgta tgaatgctaa tatctctttc 120
 acatattttg cttaagatct gtcttaggac tctcgtctgg cccatatggt tttccaaggg 180
 cagaagggcc tctttttgat gagaggcagt tttcagtaac tcttaaagtg ataacagcaa 240
 aggagaggag agagaagagt aagacaaatc gaaacattct tcaattgctt cttggccttt 300
 tggctaagct caagctcaaa acaggtcttc aaggagaaaa tacatcacia agaaaaggat 360
 gttttatttc ttaccttgct ctgaaaaaat ttccataaac tctattggct taattctgta 420
 aacttgacca atatcagagt gcttcctacc aaggagggtg gctgatgagc gtgaccatgg 480
 tacatcctag aagaatgtgt gatgaagaag ctttcaccgt gtaaaagagt tgaaaattat 540
 tcaaggagac attatggtct tgg 563

<210> 622
 <211> 505
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(505)
 <223> n = A,T,C or G

<400> 622
 tcttaagtgt gtttaataga taaagtaaac tttcctagtc aagggttaga tttttattat 60
 ctcttggtgt ccgactttct acttttcaac tttgaacttc aaaaaaacat tactttgctt 120
 atcctttgta ctttgatcag gttgtttaga attgtagatc aaaccattct ttgatcattt 180
 tattgtttta atgnttagtt ccatttataa tttttatagc caactctcgg ttattttctgt 240
 cttttgagat tgcaattcag aagctgtatg tcgaagtaat ttatgagttg actttttatac 300
 ttaggcttct ttaataacta atagtcaaga attctagagc atctaataaa aaattaactt 360
 tcagatcatt gggaatctgt cctcatttaa atatgtgtaa atgcatttcc acagcaaatt 420
 gcttcatgcc ctttgctat aaggaaatta ttcctttaga ctaatacatt tttcattttg 480
 cagnccaaat cttttttgag aaagg 505

<210> 623
 <211> 489

<212> DNA

<213> Homo sapien

<400> 623

cctactatgg	gtgttaaatt	ttttactctc	tctacaaggt	tttttcctag	tgtccaaaga	60
gctgttcctc	tttggactaa	cagttaaatt	tacaagggga	tttagagggt	tctgtgggca	120
aatttaaagt	tgaactaaga	ttctatcttg	gacaaccagc	tatcaccagg	ctcggtaggt	180
ttgtcgcttc	tacctataaa	tcttccact	atcttgctac	atagacgggt	gtgctctttt	240
agctgttctt	aggtagctcg	tctggtttcg	ggggctcttag	ctttggctct	ccttgcaaag	300
ttatttctag	ttaattcatt	atgcagaagg	tataggggtt	agtccttgct	atattatgct	360
tggttataat	ttttcatctt	tcccttgccg	tactatatct	attgcgccag	gtttcaattt	420
ctatcgctat	actttatttg	ggtaaatggt	ttggctaagg	ttgtctggtg	gtaagggtgga	480
gtgggtttg						489

<210> 624

<211> 233

<212> DNA

<213> Homo sapien

<400> 624

gttggggaac	agctaaatag	gttgttggtg	atttggttaa	aaaatagtag	ggggatgatg	60
ctaataatta	ggctgtgggt	ggttgtgttg	attcaaatta	tgtgtttttt	ggagagtcac	120
gtcagtggta	gtaataaat	tggtgggacg	attagtttta	gcattggagt	aggttttaggt	180
tatgtacgta	gtctaggcca	tatgtgttgg	agattgagac	tagtagggct	agg	233

<210> 625

<211> 459

<212> DNA

<213> Homo sapien

<400> 625

ttcgagaaca	tttttaataa	ataatgtgac	aaaattactt	ttctgattat	tggattttca	60
gtatgcaaaa	ttatggctaa	aaataagggg	cttcttacat	gaacataatg	aaaacattaa	120
tcacatggat	tgttccctta	gtactgcacg	ccttttctat	ggaacttttt	caaattatct	180
aaatgaacaa	gtttggtttt	ggtgaacacc	agcctttttt	tttgtggttc	agttttgttt	240
ggctttgtct	tccactgggg	tcagacctga	tacttatcta	tctatgaata	aatgtacatt	300
tttttcttca	aatagcacca	attataaaat	caatgatatt	cataaaatga	caaaaaagga	360
tcatagaaat	ctactagtca	gagggcatca	tttgtcaatt	gaaagcaagt	aatgcctcta	420
ttagagattt	taaggaaatc	ttgtaggttt	cgacattgg			459

<210> 626

<211> 458

<212> DNA

<213> Homo sapien

<400> 626

cctgatgatt	gttttaaaaca	gtagaaaggg	ttcagctaag	aactacagtc	cactctcagc	60
cctgtcatgt	actataggac	aagtcttcat	tcacaacaaa	tggatagcaa	caccaatctc	120
gtaacactgg	gaaaactgca	tacaatattt	agaaggaaca	ctaatacagc	agaatctgca	180
cacaacggag	tcaaagatct	gaggccaaat	cctactacac	tttacgactt	tgagttggtc	240
acttttctga	accttagctt	ctccatcagt	gtaaaactga	tgtaaaataa	tataaagcta	300
tatgaaagct	gatgtgattt	acttgtgaaa	tagtatgtgc	aaaaggactt	tgtaaaatgt	360
aaagcactat	gctggttatt	gtgatatctg	agatattttt	aaagttgcaa	ttcaattcaa	420
caagcattca	tttagagtca	tgtgcaaggc	actgtgtct			458

<210> 627
 <211> 393
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(393)
 <223> n = A,T,C or G

<400> 627
 ccattngaac gcactcagga ggtgggtttgt tctggatgca gaaaccagag atctagtttc 60
 tatccacaca gacgggaatg aacagctctc tgtgatgcgc tactcaatag atggtacctt 120
 cctggctgta ggatctcatg acaactttat ttacctctat gtagtctctg aaaatggaag 180
 aaaatatagc agatatggaa ggtgcactgg acattccagc tacatcacac accttgactg 240
 gtccccagac aacaagtata taatgtctaa ctccgggagac tatgaaatat tgtactggga 300
 cattccaaat ggctgcaaac taatcaggaa tcgatcggat tgtaaggaca tttgattgga 360
 ccgacatata cctgtgggct aggacttcca gga 393

<210> 628
 <211> 233
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(233)
 <223> n = A,T,C or G

<400> 628
 ctggatttat aaaatagttg aatgacaaaa gaagnntggt ttgacagtaa aaaaaagaca 60
 ttatggacaa aatatgcaaa atgtgcaaaag aaaaaataaa tttgcattag aaaggtgggc 120
 atttgatctc tgagccctgt gccatgtaac attgccatgt tctttcactg ttgtttgaat 180
 gttgtacccc ancccttgac tctggactta aggcaagcta tgactggcctt tgg 233

<210> 629
 <211> 450
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(450)
 <223> n = A,T,C or G

<400> 629
 ccnggacaat ntaggcagga gaaggaaata aagggtattc aattaggaaa agaggaagtc 60
 aaattgtccc tgtttgaga tgacatgatt gtatatctag aaaaccccat tgcctcagcc 120
 caaaatctcc ttaagctgat aagcaactcc agcaaagtcg caggatacaa aatcaatgga 180
 cacaaatcac aaacattctt atacaccaat aacagacaaa cagaggccaa atcacgagtn 240
 gaactctatt ccaattgctt tcaagaaaat taaaatacct agggatccaa cttacaaggg 300
 acatgaagga cctcttcaag gagaaactac aaaccactgc tcaatgaaat aaaagaggat 360
 acaaagaaat ggaagaacat tccatgctca ttggtagctt gatggggatg gcattgaatc 420
 tataaattac cttgggcagt atggacctca 450

<210> 630
<211> 486
<212> DNA
<213> Homo sapien

<400> 630
cctactatgg gtgttaaatt ttttactctc tctacaagggt tttttcctag tgtccaaaga 60
gctgttcctc tttggactaa cagttaaatt tacaagggga ttttagagggt tctgtgggca 120
aatttaaagt tgaactaaga ttctatcttg gacaaccagc tatcaccagg ctcggtagggt 180
ttgtcgcctc tacctataaa tcttcccact attttgcctac atagacgggt gtgctctttt 240
agctgttctt aggtagctcg tctggtttcg ggggtcttag ctttggctct ccttgcaaag 300
ttatttctag ttaattcatt atgcagaagg tataggggtt agtccttgct atattatgct 360
tggttataat ttttcatctt tcccttgccg tactatatct attgcgccag gtttcaattt 420
ctatcgccca tactttattt gggtaaattg tttggctaag gttgtctggt agtaagggtg 480
agtggg 486

<210> 631
<211> 211
<212> DNA
<213> Homo sapien

<400> 631
tttacataaa tattatacta gcatttacca tctcacttct aggaatacta gtatatcgct 60
cacacctcat atcctcccta ctatgcctag aaggaataat actatcactg ttcattatag 120
ctactctcat aaccctcaac acccactccc tcttagccaa tattgtgcct attgccatac 180
tagtctttgc cgcctgcgat gcagcggtag g 211

<210> 632
<211> 293
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1) ... (293)
<223> n = A,T,C or G

<400> 632
cagcgcaagt aggtctacaa gacgtactt cccctatcat agaagagctt atcacctttc 60
atgatcacgc cctcatagtc atttttcctt atctgcttcc tagtcctgta tgcccttttc 120
ctaacactca caacaaaact aactaatact aacatctcag acgctcagga aatagaaacc 180
gtctgaacta ngctgcccgc catcatccta gtctcatcg ccctcccatc cctacgcatc 240
ctttacataa cagacgaggt cnacgatccc tcccttacca tcaaatcaat tgg 293

<210> 633
<211> 263
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1) ... (263)
<223> n = A,T,C or G

<400> 633

```

nggtctgcag tgtccctttt tatatcatgc tagtggtgag acataacttga ctaacttggg      60
aacagttcga tatattgaca accgtcaact taagaaaatc aacagctttt ggccccagcg      120
tccaagtga cttttcatgg agtgcagaat ctcaaatgga caaaatactt tgtcttttta      180
aatactgaaa attnaattat tagtactatg actgaaagat tcttcatggc taaaaagctc      240
tgcacaaac tcaattcagg agg                                     263

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<210> 634
<211> 491
<212> DNA
<213> Homo sapien

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<400> 634
cctactatgg gtgttaaatt ttttactctc tctacaaggt tttttcctag tgtccaaaga      60
gctgttcctc tttggactaa cagttaaatt tgcaagggga ttttagagggt tctgtgggca      120
aatttaaagt tgaactaaga ttctatcttg gacaaccagc tatcaccagg ctcggtaggt      180
ttgtcgccctc tacctataaa tcttcccact attttgctac atagacgggt gtgctctttt      240
agctgttctt aggtagctcg tctggtttcg ggggtcttag ctttggctct ccttgcaaag      300
ttatttctag ttaattcatt atgcagaagg tataggggtt agtccttgct atattatgct      360
tggttataat ttttcatctt tcccttgccg tactatatct attgcgccag gtttcaattt      420
ctatcgcccta tactttatct gggtaaatgg tttggctaag gttgtctggt agtaagggtg      480
agtggggttg g                                     491

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<210> 635
<211> 270
<212> DNA
<213> Homo sapien

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```

<400> 635
ccaattgatt tgatggtaag ggagggatcg ttgacctcgt ctggttatgta aaggatgcgt      60
agggatggga gggcgatgag gactaggatg atggcgggca ggatagttca gacggtttct      120
atttcctgag cgtctgagat gttagtatta gttagttttg ttgtgagtgt taggaaaagg      180
gcatacagga ctagggaagca gataaggaaa atgactatga gggcgtgatc atgaaagggtg      240
ataagctctt ctatgatagg ggaagtagcg                                     270

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```

<210> 636
<211> 383
<212> DNA
<213> Homo sapien

```

```

<400> 636
cctactatgg gtgttaaatt ttttactctc tctacaaggt tttttcctag tgtccaaaga      60
gctgttcctc tttggactaa cagttaaatt tacaagggga ttttagagggt tctgtgggca      120
aatttaaagt tgaactaaga ttctatcttg gacaaccagc tatcaccagg ctcggtaggt      180
ttgtcgccctc tacctataaa tcttcccact attttgctac atagacgggt gtgctctttt      240
agctgttctt aggtagctcg tctggtttcg ggggtcttag ctttggctct ccttgcaaag      300
ttatttctag ttaattcatt atgcagaagg tataggggtt agtccttgct atattatgct      360
tggttataat ttttcatctt tcc                                     383

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```

<210> 637
<211> 537
<212> DNA
<213> Homo sapien

```

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<220>
<221> misc_feature

```

206

<222> (1)...(537)

<223> n = A,T,C or G

<400> 637

ttttaatcct	ggggtatata	ggcagnactt	taaattgcaa	agtcctccgg	gcctatcttc	60
ctctacattt	ttgtaattaa	ctctgggggc	ttacttgttt	tggcagtact	gaaatcaaag	120
gagctgggtc	ttctttttctc	ccaattatct	tcatatgaaa	gcacctacaa	ttagcctgtt	180
agtcctattc	agatacatca	aatatcagtg	aatgctttac	tattcgcaca	tttaagcatc	240
tttgttttac	ataaaattag	agtatgaaaa	ccagtgttca	attttttatc	ttgttgagct	300
tgtaaaaatgc	cagcaattta	aaactaggac	ttttccccc	ataagccaag	gaggtagaat	360
tactaataca	agggttaaag	aaggtagatt	ttgttttcaa	tatttgggta	atattagaaa	420
gattcttccc	acagggaaga	actagcaagt	gtcccaattt	tttccaaacg	ttggggaggg	480
gaaaattcac	tgtatcatga	aaccctaagg	gtttngtgc	acttcctgct	ttttagg	537

<210> 638

<211> 445

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(445)

<223> n = A,T,C or G

<400> 638

ccagcagaac	acagnagtga	tttgggtccc	tttggtcccc	agtgggggtat	ctatccttgt	60
gcagggcaca	agcctacatg	gtggctctgg	tcatatcatt	agaaaataga	cagaaatggg	120
ctgcacacca	gaatgaatga	attgaattga	aagggaggag	tgatgggtga	aaaaaaaaaca	180
agtcaattca	tttagactgg	tagaaccaga	accactgtgt	agtacatcca	aacgggttaa	240
attccctgga	agatgttaca	taatcctatc	atggtgttta	tttatggaaa	tctattttaa	300
aaattttatg	taatactgca	cagtctgttt	gcatgatgcc	ttgtacgtag	tagcaactca	360
gtaataactt	tttgaatgaa	ctagtatagt	attttaatta	gctagtcttc	gtgtactggg	420
acaaaagaac	agtgtcatct	tacag				445

<210> 639

<211> 584

<212> DNA

<213> Homo sapien

<400> 639

gcttgagtat	tctatagtgt	cacctaaata	gcttggcgta	atcatgggtca	tagctgtttc	60
ctgtgtgaaa	ttgttatccg	ctcacaattc	cacacaacat	acgagccgga	agcataaaag	120
gtaaaagcctg	gggtgcctaa	tgagtgaagt	aactcacatt	aattgcgttg	cgctcactgc	180
ccgctttcca	gtcgggaaac	ctgtcgtgcc	agctgcatta	atgaatcggc	caacgcgcgg	240
ggagaggcgg	tttgcgtatt	gggcgctctt	ccgcttcctc	gctcactgac	tcgctgcgct	300
cggtcggttcg	gctgcggcga	gcggtatcag	ctcactcaaa	ggcggtaata	cggttatcca	360
cagaatcagg	ggataacgca	ggaaagaaca	tgtgagcaaa	aggccagcaa	aaggccagga	420
accgtaaaaa	ggcgcggttg	ctggcggttt	tccataggct	ccgccccct	gacgagcatc	480
acaaaaatcg	acgtcgaagt	caagagggtg	cgaaaaccga	caggactata	aagataccag	540
gcgtttcccc	ctggaagctc	cctcgtgcgc	tctcctgttc	cgac		584

<210> 640

<211> 404

<212> DNA

<213> Homo sapien

```

<400> 640
ccataggaac gcactcaggc aggtggtttg ttctggatgc agaaaccaga gatctagttt    60
ctatccacac agacgggaat gaacagctct ctgtgatgcg ctactcaata gatggtacct    120
tcctggctgt aggatctcat gacaacttta ttacctcta tgtagtctct gaaaatggaa    180
gaaaatatag gagatatgga aggtgcactg gacattccag ctacatcaca caccttgact    240
ggccccaga caacaagtat ataatgtcta actcgggaga ctatgaaata ttgtactggg    300
acattccaaa tggctgcaaa ctaatcagga atcgatcgga ttgtaaggac attgattgga    360
cgacatatat ctgtgtgcta ggatttcaag tatttgggtg ctgg                    404

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<210> 641
<211> 138
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(138)
<223> n = A,T,C or G

```

```

<400> 641
ctgtgacagg aacattacct gaagtgcagg gtggttacct gcacaaagtc ccatttccaa    60
aaatttctgt gtaattcacc agaaattttg gatggaataa ttagaaaaaa aaaaagagggt    120
taaaacntgt aactcaaa                    138

```

```

<210> 642
<211> 381
<212> DNA
<213> Homo sapien

<220>
<221> misc_feature
<222> (1)...(381)
<223> n = A,T,C or G

```

```

<400> 642
ctgtaggtag aattttttacc cagaaaagat aggccctaga agcctcattt cttttctcca    60
tggaaggaga cagccctctg ctgcagcgtt caacttgtgt gtttactgac agagtgaact    120
acagaaatag cttttcttcc taaaggggat tgttctacat tttgaagtta ttttttaata    180
aaattgaatt atgttgtgta ttgtgcttcc taataggaaa tgcattattg gactgttttt    240
gtaacatcct gtttattgca aatagctagt atcgttcaaa aactgtataa aatacttttg    300
tacatattag caatgtctaa tttgtatata cttcagttaa atttccttaa aacttgaaag    360
gggaccttgt anaaattaaa a                    381

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<210> 643
<211> 403
<212> DNA
<213> Homo sapien

```

```

<400> 643
ccttcctaaa aaatagtggg gagctggagg ctacttccgc cttcttagcg tctggtcaga    60
gagctgtagg atatcccatt tggccccgac aagatgacat agatttgcaa aaagatgatg    120
aggataccag agaggcattg gtcaaaaaat ttggtgctca gaatgtagct cggaggattg    180
aatttcgaaa gaaataattg gcaagataat gagaaaagaa aaaagtcatg gtaggtaggg    240
tggttaaaaa aaattgtgac caatgaactt tagagagttc ttgcattgga actggcactt    300

```

atcttctgac catcgctgct gttgctctgt gagtcctaga tttttgtagc caagcagagt 360
 tgtagagggg gataaaaaga aaagaaattg gatgtattta cag 403

<210> 644
 <211> 688
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(688)
 <223> n = A,T,C or G

<400> 644
 cctattttatt tgttttggcc ctggatcttt cctaatacaca attatatttc tttatTTTTTg 60
 cctttgagca gtttcattta tctttgtggg cagggaagat taaatatgaa attcagTcca 120
 gtcattttgc tactggtttag ctttagtttg aggcaagtaa aaatttttga ttaaaattag 180
 tttcttaaaa ttatgccctt gctttaccaa ataatacaat tggctaaaaa ataaggggat 240
 gtaactttgc attttgaaga acaaaccaat aatttttcat gagccctact cgatcttctt 300
 taaagaagac cttcctaaga gacaattagg gatgagtttg attaatggga aatagctcta 360
 ggtagattta ttttaaattc catacaccaa gtgatttaac cacagtggca gtggcagctt 420
 ctgaaccgtc aagtatgaac atcacttaaa aattaaaaga tgcttaataa taaactctta 480
 attttcatta agccaatctg taattcagaa gaaaagcata tgtctgccat gggactattg 540
 cagtgcgtct ccacagtggt taacacagga gagatatgtt attttatgtg tatgtcttag 600
 tttgggatat gtggtagtaa gaacatgtca agagt.gcttt tcttcaaacc tgnCagctca 660
 actgangaaa gacaggtact tccattgc 688

<210> 645
 <211> 484
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(484)
 <223> n = A,T,C or G

<400> 645
 ccaaattgtgt ctccagccca cacttccagg tggcagagcg agctctctat tactggaata 60
 atgaatacat catgagttta atcagtgaca acgcagcgaa gattctgccc atcatgtttc 120
 ctctcttgta ccgcaactca aagaccatt ggaacaagac aatacatggc ttgatataca 180
 acgccctgaa gctcttcatg gagatgaacc aaaagctatt tgatgactgt acacaacagt 240
 tcaaagcaga gaaactaaaa gagaagctaa aaatgaaaga acgggaagaa gcatgggtta 300
 aaatagaaaa tctagccaaa gccaatcccc aggtactaaa aaagagaata acatgaaaac 360
 gccaggggtt acttgaatgt ttttataaga taggaatata tgtcttcacc atgggggggg 420
 gtctcggtat tctaatacgt tgtatatgaa aatgggtgcn ataaaaagta cttttaaact 480
 ttgt 484

<210> 646
 <211> 447
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature

<222> (1) ... (447)

<223> n = A,T,C or G

<400> 646

gggtcgcggtt	gaacaacttg	gttcaagatg	gtgggggcat	ttttagagcg	gcaataattg	60
aaaaaaaaagg	cgaactctgc	cttggagagg	tagatgataa	gaaataaaaa	ggtgtttata	120
actattttgt	attataaagt	gggccttaga	gataggaaga	agaatgatgg	attccttttg	180
gatcaatcag	aaaggaaaca	cgaaagaaaa	gtcaggaagg	tagagagaga	aaaagggagg	240
gaaggagaaa	gaatgggaat	aaaataagga	ggttaagagat	actatttttg	ctgagcaacc	300
agtgtgtttc	aggatgatac	aaagaaaaat	atagaataga	aataagtgca	ggcttggaat	360
cagctacaaa	tcctaaagat	ggggtgtgtg	tggatgtgtg	tgtgtgtgtg	tgnacaccat	420
tgtgtgtttg	taaaatgtgt	atgtccc				447

<210> 647

<211> 388

<212> DNA

<213> Homo sapien

<400> 647

gaagggtgata	taaaatgact	gtcatcattt	ggagtgtgca	gtacagttac	ttcatgttcc	60
tcagggttttag	aacaattttcc	cctgcaagtt	ctcacacaga	taggcagaaa	tcataactaa	120
tttttggttaa	tcactatggc	agccgttgaa	gaatttaaga	gaacctgcc	gtaagatttg	180
gaataagatt	ctatattatt	gcattccacag	aaaagaatgt	actgatatac	tataaactct	240
aggagaaaaac	ttaattgaaa	tagtgttatt	aagtgttgaa	agtaccataa	aaatataagg	300
gaaaataagc	tttcttagaa	tttttcagtg	ttctagtttt	taaacagtga	tgttttttat	360
taacctatatt	catccattca	aagacagg				388

<210> 648

<211> 632

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (632)

<223> n = A,T,C or G

<400> 648

cctggctggg	cntttgacct	gcgnttttaa	atnactcaca	gaggggtggga	caggaggaag	60
agtgaaggaa	aagggtcaaac	ctgttttaag	ggcaacctgc	ctttgttctg	aattggtctt	120
aagaacatta	ccagctccag	gtttaaattg	ttcagtttca	tgcagttcca	atagctgac	180
attgttgaga	tgaggacaaa	atcctttgtc	ctcactagtt	tgctttacat	ttttgaaaag	240
tattatTTTT	gtccaagtgc	ttatcaacta	aacctgtgtg	taggtaagaa	tggaatttat	300
taagtgaatc	agtgtgacct	ttcttgtcat	aagattatct	taaagctgaa	gccaaaatat	360
gcttcaaaaag	aagaggactt	tattgttcat	tgtagtccat	acattcaaag	catctgaact	420
gtagtttcta	tagcaagcca	attacatcca	taagtggaga	aggaaataga	tagatgtcaa	480
agnatgattg	gtggaggagg	caaggttgaa	gataatctgg	ggttgaaatt	ttctagttnt	540
cattccgtac	atttttagtt	agacatcaga	tttgaaatat	taatgttacc	tcctcaatgg	600
ggtggtatca	gacctgcccg	ggcggnccgn	tc			632

<210> 649

<211> 300

<212> DNA

<213> Homo sapien

210

<220>
 <221> misc_feature
 <222> (1)...(300)
 <223> n = A,T,C or G

<400> 649
 nggtgaagat agaanaaata taagcgaat tggataaaat agcactgaaa aaatgaggaa 60
 attattggta accaatttat tttaaaagcc catcaattta atttctgggtg gtgcagaagt 120
 tagaaggtaa agcttgagaa gatgaggggtg tttacgtaga ccagaaccaa tttagaagaa 180
 tacttgaagc tagaagggga agttgggttaa aaatcacatc aaaaagctac taaaaggact 240
 ggtgtaattt aaaaaaaact aaggcagaag gctttggaag agttagaaga atttgaagg 300

<210> 650
 <211> 498
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(498)
 <223> n = A,T,C or G

<400> 650
 ngtnctgnta aacagaagggt tacaangccc ttctggcttt aagcagtcac aggaatgtga 60
 cagacattcc tcttagggag cgcctcctcc taggggttcc tcatctgtct cacactgagt 120
 ggatgtaatg ctattttaat cctgctgtgg cccccaatac tagtacttgt ccataccttc 180
 ttgcatTTTT agcgtctgct ctgtgggggtt gttaggccct ggcaactcca ggaactagt 240
 ctaaagctgc atctntctct cccctctagg gatcgataaa gtttactgct agaaagtctc 300
 cactgcggtg tgctgacatc tgccctgaac cttcacctca cagcattaca ggctttaatc 360
 agattctgct ggaagacac aggctgatcc acgtgacctc ttctgccttc actgggctgg 420
 ggtgatcctt ggtgcctttg tttccacaag gccttttctc gccccctgcc ttgccaaga 480
 catttaataca gcacacag 498

<210> 651
 <211> 654
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(654)
 <223> n = A,T,C or G

<400> 651
 ctgaggggtcc ccagggtttct aaagctctca ggacgagaaa gtaggtccca agataaggag 60
 cctaaagggc ttttttcttt ctgtgtattc cttcttggcc tccaacatgg gtacagtcac 120
 aagagcatgt aacagagaag aaggactana cctaccattt tctggataaa gaattggaaa 180
 gaggatccac aggttaaccaa aaagtaccag ggaaatggca gagaaggaaa acctcaggag 240
 accaacctca taagtgggtat ttattagngc ctggggtcaa atccaaattg tacatgaata 300
 tgtctgggtcc tagataggggt accgaagact ttgaaagtga attttgggtat atcattgccc 360
 agattccaga ctggntattg tgtgacacaa catacaggat atatctgaat agtgctcaga 420
 agagtttgaa aatgcaaagt atattaaaat aaagatgaaa aagagaaagc tggtcagaac 480
 ttgtggacat aacccttctg gatctgtngc ctgattaaaa aatagttgat attctcgaat 540
 gaattaaaac aagatttaga gactgagcat ggtagctnat tcttgtaatc caacnctttg 600
 ggaggggcaag gcaanagaat tgcttgcggc caggagtttt gagaccagct tggg 654

211

<210> 652
 <211> 293
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1) ... (293)
 <223> n = A,T,C or G

<400> 652
 ngctctgttgc actgagggtga ctaaggatac attttgagga agtagctcca agaacatttc 60
 cattttcact gtgccttcac atacatctaa tggaaatgaa cagcaccctt catccatcca 120
 cggaagcgat taagaaaagg gtgggatgga aaaattaacc caacaatatt agatcaatac 180
 gtagtattta agngtccata atgtgccagg ctgaagatgc acgggaaaac cacactagcc 240
 ggtctgtcaa gggcttgaga ataccataaa caagaaaaca gacgaaccaa ttt 293

<210> 653
 <211> 294
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1) ... (294)
 <223> n = A,T,C or G

<400> 653
 ngtccaccac tgcagcccta catacagttg aaaaaaaatt ccattctgtt aacatttgtt 60
 ttataagttt tcacgcaata cacaaaaaac ccctctgcac ttcttgtaaa gaacaaaaaa 120
 gatacacaac agttaagcgt aaagatcaca ggcaatagca ttcaaacatg gatgtgggta 180
 gagaaaggag tacctggcat gtagacctgc ttagtttgac tgaatccttg atttttaatt 240
 tggcttttca tgggccgctc acaacaccaa cgctgtgtga ggtatggtag tcag 294

<210> 654
 <211> 250
 <212> DNA
 <213> Homo sapien

<400> 654
 ctgtccttga acaagtatca atgtgtttat gaaaggaaga tctaaatcag acaggagttg 60
 gtctacatag tagtaatcca ttgttggaat ggaacccttg ctatagtagt gacaaagtga 120
 aaggaaattt aggaggcata ggccatttca ggccagcataa gtaatctcct gtcctttggc 180
 agaagctcct ttagattggg atagattcca aataaagaat ctagaaatag gagaagattt 240
 aattatgagg 250

<210> 655
 <211> 494
 <212> DNA
 <213> Homo sapien

<400> 655
 ccattataat ttataaacac cattaccctt taaattctac cgattataag cagcgtaaaa 60
 gtaactatat aaagcaaaca tcgcaaagga actctgcagg agctcttaatt tcctttatgt 120

212

```

agctatcata aaattcactt tcctgaagac atttactctc attcacttcc aaactccaaa 180
cctttttctg gtagcaccac ttttgttttt aatagaaaga tgagttcata tctgtacatc 240
tctccaaagc tctaaggaat gagaaaagga tcctagtata ttgaaattac tgatgtttaa 300
tacctctgcc ttttacttaa aagccattta atatttttaa agtcaaaact tgacatacag 360
gtatttataa ggaatctcca tgactctgaa ggaatgaaat tgatgtagggt agctttggct 420
atgtaaagac atagtagagg acaattactt aaagaagagt tttcttttga ggatttgtag 480
atttgactaa gcag 494

```

<210> 656

<211> 477

<212> DNA

<213> Homo sapien

<400> 656

```

cgcgttactg tacatattgc tagcaggaga caactggaaa tactaaacaa atactggaat 60
tcacattaca gacagacgaa accaacatgg atgccacaca taacttcctt tgtagtttca 120
cagagggcct atttgtgggt gctcagggtg ggtcacatcat tgcttgacaga aatggcctga 180
tcatagctct atgaaacaat gaattcggaa tgaaatctta ccatgacacc tctctgtagg 240
aaagaaatgt tgcttcacgt gtgctaagtt gagataataa tatttcacat atttatatac 300
agagaatcac tctcaaattt aaccacaagat aagcaatagg atttgggggt gacttgtaca 360
catttctaac aacacttttc ttttttctag aggtcactct caaacactga tatatcacta 420
tagtttgagt gtagggattc agtaatcaaa ggttggttatt gcaaaagagc caggcag 477

```

<210> 657

<211> 576

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(576)

<223> n = A,T,C or G

<400> 657

```

cctctacctg tanatcacta tttttctaaa gacaatttgg tgttttgaag ataaatgtca 60
ttagtctatg ataatagcat cataggacaa ttagccattt tagacttgac catattttct 120
cttttttagca tatagccatc ttgatattta ggtgggagac tactccaatg gagcaacagt 180
ttcattttac atgattggat ttgaaaattt acaaatttta aactcataag aatttctaat 240
aatttgaaaa tggaaacatt tgaccacag tctagcagca taaatacatt tataaaatac 300
ttcattgttg atcttaggtc attgatttaa aacagaattt ggtgactatg ggcagggtgga 360
gggggccagt gaggaaggta taaaagagaa atctttatga attgtgttca gattgatttt 420
gtataaacat aatatattca tggttgtatc tcttatttat aatacccaac taacatgaag 480
gtgggtccaag ggaaggatca atatttttaa taacatattt gcttaaaata tcatacagt 540
gctgcttcat aaaaaatctt ataaactttt attacc 576

```

<210> 658

<211> 344

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(344)

<223> n = A,T,C or G

213

<400> 658

cctgaaaaga	aagntgctct	tatggactct	tgcattgtaa	gactatgtct	tcacatcatg	60
gtgcaaatca	catgtaccca	atgactccgg	ctttgacaca	acaccttacc	atcatcatgc	120
catgatggct	tccacaaagc	attaaacctg	gtaaccagag	attactgggtg	gctccagcgt	180
tgtagatgt	tcataaaatg	tgaccacctc	tcaatcacct	ttgagggcta	aagagtagca	240
catcaaaagg	actccaaaat	cccataccca	actcttaaga	gatttgtcct	ggtacttcag	300
aaagaatttt	catgagtgtt	cttaattggc	tggaaaagca	ccag		344

<210> 659

<211> 230

<212> DNA

<213> Homo sapien

<400> 659

ctgctttccc	tgctaaacag	ttccagagca	aaagcagcaa	aaagaaaata	tgggagggat	60
atgggcaacg	tatactcgaa	cgtacgcaga	gaagagagta	cggtagctc	taatatttct	120
cattgaactt	ggtggtatgt	gccttccttg	catataaggc	catagtgtct	ttttgggagc	180
gctagaatat	ccatccactt	gacagtgtac	acaaaatagg	ctgtttccag		230

<210> 660

<211> 80

<212> DNA

<213> Homo sapien

<400> 660

ctggctccttg	ttaaaactga	tcaccacttt	ggagagatcg	actggaggct	cctgggtgtt	60
ctgagggggcc	tgggggacag					80

<210> 661

<211> 535

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(535)

<223> n = A,T,C or G

<400> 661

ctgaaccata	tctgattaac	tcttttgtct	ctgttattgg	aacaaaaccg	acgctatgcc	60
tgagcccgcc	agactgcaac	caaaaacaca	gtttggggtc	agaagacatt	aaaaatcaca	120
ataaaatagg	atgaatgttc	taagtcacgc	aactgaatca	aggcaccttt	ttttttcaaa	180
agcaaaaagt	tgtttaacaa	tattccagaa	tagtagatac	ttcaaaaacc	agattacagt	240
atatatcatt	ttgctgcaca	ttttagtcta	ttttctgtat	acatagtcac	acattcttta	300
ccctctccca	acttatacat	gctttatccc	cccagtcatg	tgctatgtag	gtataaaaaa	360
ataaagtgtg	atctaataca	gtgatttaaa	aaaaaaaaact	aacgaatgcc	ncnatnataa	420
cnctgaactt	gtttccctnt	tgaaggacat	tggaaatgtt	accgagggtt	ntttacctng	480
gccgcaaccn	cnctangggc	naattccagc	ncactggggg	ccgttactag	gggat	535

<210> 662

<211> 257

<212> DNA

<213> Homo sapien

<400> 662

214

```

cctgactaaa gcacatatca cactccctac acttccatgt tttctctccc atgtggaccc      60
tctgatgcat atcaagattc aagcgctgtg ttaggccctt cccacagtcc tcacatttgt      120
atggcttttc tacactgtga actttttctt gcactttaga gaatgaattc tgtacaatgt      180
tcttcccatg ctgctcacat ttgagagggtg tttctctgct gtggcgctctc tgatgggtca      240
gacgagttga ggaccag                                     257

```

<210> 663

<211> 516

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(516)

<223> n = A,T,C or G

<400> 663

```

ccaattatag gtatttttatt ttttaaagat tagagngttc ttgaagctct ttctatttct      60
ttgtcaatga actaaacatt ggcaaatatg tagggtttcc cacataagaa cattattaac      120
atcaaaatag aaagctggtg gtagaataa tgattgggaa cacagagtct ctactcagcg      180
ttctacttct gccataccat aactttgtga tctcacgaaa tatctctcca tgttctcatc      240
cctatgtata gttctgtcat ttttcaataa gagctttttg cttaattatg aagtactagt      300
tactataacc attattttga gcttcatgta aatcaagaac acatggactc cacttgcaaa      360
acattgaaaa tgtagttagg gattgggggc aaaaagcaac attttaaaat gtgtaaagac      420
aatgagtaag caacaaagtg tccaattttt taggcgaaag ttgcatatgt caggaaaagg      480
caggattaag taatagagaa tttgaatgat aactgg                                     516

```

<210> 664

<211> 212

<212> DNA

<213> Homo sapien

<400> 664

```

gtccgaggag gttagtgtgt gcaataaaaa tgattaagga tactagtata agagatcagg      60
ttcgtccttt agtgttgtgt atggctatca tttgttttga ggttagtttg attagtcatt      120
gttgggtggt aattagtcgg ttgttgatga gatatttgga ggtggggatc aatagagggg      180
gaaatagaat gatcagtact gcgvcgggta gg                                     212

```

<210> 665

<211> 408

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(408)

<223> n = A,T,C or G

<400> 665

```

atccaggggt ncccggtngc tgcngggaaa cctccagcct tgttcttcaa accactcagc      60
tcatgtgttt tgcgtgact agtactgaat aatacaacca ctcttattta atgttagtat      120
tatttatttg acaactcagt gtctaacagc ttgatatgca ggtccttgca tcctacattt      180
cttttaggaag ttacccattt gtaactttaa aaacaggaaa aatatcagtt ggcaaatgca      240
atcttttttt tttttaagct aaaggggggn naacngnaan naaaatnttt ntgangtnng      300
gtctataagc acccttgang ggatntgtta aaagngncat naanggggga ttctcntttn      360

```

gcaaaaaaat ntaannatca atttatanan ctttattttt nactttnt

408

<210> 666

<211> 635

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(635)

<223> n = A,T,C or G

<400> 666

ctgaagnaca	agggtcaggc	aaaaataaga	tcacaatcac	caatgaccag	aatcgccctga	60
cacctgaaga	aatcgaaagg	atggttaatg	atgctgagaa	gtttgctgag	gaagacaaaa	120
agctcaagga	gcgcattgat	actagaaatg	agttggaaaag	ctatgcctat	tctctaaaga	180
atcagattgg	agataaagaa	aagctggggag	gtaaaccttc	ctctgaagat	aaggagacca	240
tggaaaaagc	tgtagaagaa	aagattgaat	ggctggaaaag	ccaccaagat	gctgacattg	300
aagacttcaa	agctaagaag	aaggaactgg	aagaaattgt	tcaaccaatt	atcagcaaac	360
tctatggaag	tgcaggccct	cccccaactg	gtgaagagga	tacagcagaa	aaagatgagt	420
tgtagacact	gatctgctag	tgctgtaata	ttgtaaatac	tggaactcagg	aacttttggt	480
aggaaaaaat	tgaagaact	tanctctcga	atgtcattgg	aatcttcacc	tcacagtggg	540
gttgaaactg	ctatagccta	agcnggctgt	ttactgnntt	ncattagcag	gtgctcacca	600
tgtctttggg	gtgggngggg	ggagaaagaa	agaan			635

<210> 667

<211> 388

<212> DNA

<213> Homo sapien

<400> 667

gaagggtgata	taaaatgact	gtcatcattt	ggagtgtgca	gtacagttac	ttcatgttcc	60
tcagggtttag	aacaattttcc	cctgtaagtt	ctcacacaga	taggcagaaa	tcataactaa	120
ttttggttaa	tcactatggc	agccgttgaa	gaatttaaga	gaacctgccca	gtaagatttg	180
gaataagatt	ctatattatt	gcattccacag	aaaagaatgt	actgatatac	tataaactct	240
aggagaaaaac	ttaattgaaa	tagtgttatt	aagtgttgaa	agtaccataa	aaatataagg	300
gaaaataagc	tttcctagaa	tttttcagtg	ttctagtttt	taaacagtga	tgttttttat	360
taacctattt	catccattca	aagacagg				388

<210> 668

<211> 498

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(498)

<223> n = A,T,C or G

<400> 668

tgatcttaac	aaaattcgta	gcagtggaaac	cttgaaatgc	atgtggctag	atztatgcta	60
aaatgattct	cagtttagcat	tttagtaaca	cttcaaagg	ttttttttgt	ttgttttcta	120
gacttaataa	aagcttagga	ttaattagaa	gaagcaatct	agttaaattt	cccatttgta	180
ttttattttc	tgaataactt	ttttcatagt	tattcgttta	aaaagattta	aaaatcattg	240
cacttttggtc	agaaaaataa	taaatatatc	ttatgaatgt	ttgattccct	tccttgctat	300

216

ttttattcag tagatTTTTg tttggcatca tgttgaagca ccgaaagata aatgattttt	360
aaaaggctat agagtccaaa ggaatgttct tttacaccaa ttcttccttt aaaaatntct	420
gaggaatttg ttttcgcctt actttttttt cttctgtcac aatgctaagn ggtatccgag	480
gtntttaata tgagattt	498

<210> 669
 <211> 622
 <212> DNA
 <213> Homo sapien

<400> 669	
ccttagccaa agaatgcagt ggagccttcc cccttcaact gcattgtgaa tgaataccaa	60
ttaacagcat aaaaattaat agtcccataat cagatctgga aggggtttct ggggctgtct	120
gatgtcccta tcctgttgta gtgaacacaa tagcagaaaa ttctttctgg gtccatctgc	180
tataaagtct tggtaaaaca gcattactat gaagaggatg aactcaccta ccttcagatg	240
gaggaaaagt gaaaaggact taggcttttag tcctccatga cttttcttaa gcactaccta	300
cctgtaataa gctgagtgca aaaggatgcc gaagaaaatc tgcacccaga agctgttaga	360
aagcactgca gagaacaggg tatgaagaaa ataaagagtt cttaataaac ccttaagatt	420
ctttgttcaa ggtaaccttg ccaaaagggc agagttagtg gcaaagagtt gcttttaatc	480
tagctctaca ctgcatttga aaataaaatt tgcccathtt gaatatattg tttataatta	540
aatgtgcttt ttacactgca ggtcaatata aaaactgggt agtaaatttc cagcgagcat	600
ttatgttcat ttgctcacag ca	622

<210> 670
 <211> 477
 <212> DNA
 <213> Homo sapien

<400> 670	
ttgggcccctc tagatgcatg ctcgagcggc cgccagtgtg atggatatct gcagaattcg	60
cccttgccgc ccgggcaggt gatggatgag gagcaaaaac ttatatacga tgatgaagat	120
gatatctaca aggctaataa cattgcctat gaagatgtgg tcgggggaga agactggaac	180
ccagtagagg agaaaataga gagtcaaacc caggaaaggg tgagagacag caaagagaat	240
atagaaaaaa atgaacaaat caacgatgag atgaaacgct cagggcagct tggcatccag	300
gaagaagatc ttcggaaaga gagttaaagac caactctcag atgatgtctc caaagtaatt	360
gcctatttga aaagggttagt aaatgctgca ggaagtggga gggtacagaa tgggcaaaat	420
ggggaaaggg ccaccaggct ttttgagaaa cctcttgatt ctcatgtctat ttatcag	477

<210> 671
 <211> 127
 <212> DNA
 <213> Homo sapien

<400> 671	
gtgtgtgtgt ctacttgggc gtgtttaacg tgtgcgtttg tgtctgcgtg tgcattgtgtc	60
tgtgtgtgcg cgtgtatttc agtttgggtt gccggatccc atatgattgc gtgcctgtgt	120
acctgag	127

<210> 672
 <211> 400
 <212> DNA
 <213> Homo sapien

<400> 672	
gggtctgcac agctatgtta acagcatcct tataccagga gtaggaggaa agacacgact	60

217

ggaaaagcaa	ttcaagctgg	tcacacagtg	taatgcaaaa	tatgtggaat	gtttcagtgc	120
tcagaaagag	tgtaacaaag	aaaagaacag	aaactcttca	gttgtgccat	ctgagcgtgc	180
tcgagtgggt	cttgcaccat	tgcctggaat	gaaaggaaca	gattacatta	atgcttctta	240
tatcatgggc	tattatagga	gcaatgaatt	tattataact	cagcatcctc	tgccacatac	300
tacgaaagat	ttctggcgaa	tgatttggga	tcataacgca	cagatcattg	tcatgctgcc	360
agacaaccag	agcttggcag	aagatgagtt	tgtgtactgg			400

<210> 673

<211> 600

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(600)

<223> n = A,T,C or G

<400> 673

ctggcggttc	tcattagtga	atgtatgaca	gcaggatgtg	aggggatgcc	caggagtcag	60
tgtagcatt	gtcatctgag	atcactgcta	ttaatatcat	ccattaattt	attagtgagc	120
ttcactatat	gcagactggg	agataaggag	aaaatctgtc	acattctctc	tagctaatac	180
gatcagctac	caattaatga	gattctgaat	gaaatatcaa	tatgtgtttt	tctaatttgg	240
acctaggaca	gagctgttgc	ttgtcataga	gaaaaacaat	aatgcttaaa	catagcacat	300
tataattaaa	gcagggtttct	cacatacttt	tcattttatc	ctttggataa	ttttgtgagg	360
aacgcaggac	accaacttcc	ctttcataga	tacaatcccc	atgctattga	tgaaagtgtt	420
tttgaatgaa	gccatacaac	aaataactga	tcaaagtggc	attacaccaa	aatttcttag	480
taggactcct	gcatagaatg	tttagataga	cgtgaaaagt	ttgttcanga	ggaccagcaa	540
gagagaaaact	gggttctttg	ggagggtttc	ggtgctacat	ttataccctn	catcagagtn	600

<210> 674

<211> 140

<212> DNA

<213> Homo sapien

<400> 674

ggtgggttgg	gtaaatgagt	gaggcaggag	tccgaggagg	ttagttgtgg	caataaaaaat	60
gattaaggat	actagtataa	gagatcagg	tgcctcttta	gtgttggtga	tggttatcat	120
ttgttttgag	gttagtttga					140

<210> 675

<211> 245

<212> DNA

<213> Homo sapien

<400> 675

gttgggttgg	tggtgtaaat	gagtgaggca	ggagtccgag	gaggtagtt	gtggcaataa	60
aaatgattaa	ggatactagt	ataagagatc	aggttcgctc	tttagtggtg	tgtatggcta	120
tcatttgttt	tgaggtagt	ttgattagtc	attgttgggt	ggtaattagt	cggttgttga	180
tgagatattt	ggagggtggg	atcaatagag	ggggaaatag	aatgatcagt	actgcggcgg	240
gtagg						245

<210> 676

<211> 621

<212> DNA

<213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(621)
 <223> n = A,T,C or G

<400> 676
 ctgtccccag ggnaaatagt ngaattcaac taagatctgt taataagatg tcagaataac 60
 taataatddd attaggaaaa aatcatgttt taaatttcaa aatgacactt atttgtcaag 120
 taatatgac ttggaaaatt ttaaagaaaa ataatcctac ttataaaacta cttttttata 180
 attgttttca gaaaaaaagt ttacagtctt aaggaaaata ttcagggtcta tcatatgggt 240
 tgacagattt tttaaaagt atttttggt aggtcttctt ttagaaaaaa attaacttca 300
 agggtttttt gtaccactat aatctctaata acttactcag aattactgtg tatttactta 360
 atttcttatt atgtgcctta ttatgtgctt aagatacaat aggttagagt ttaactctaaa 420
 tatcttgaaa gctatattgt gggcttggt agcattttgt ttttctttc tctgttttgg 480
 taaggattta aaattttttt cattgcaatt ttaagtgggt ttcaataagt aatagttttt 540
 atcaaatttt tgggtgcttg tgagagacg gcgtggggaa ggggtgaatg ttttgggat 600
 aattcagtgc acacctgggg g 621

<210> 677
 <211> 210
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(210)
 <223> n = A,T,C or G

<400> 677
 tttacataaan atattatcag catttaccat ctcacttcta ggaataactag tatatcgctc 60
 acacctcata tcttccctac tatgcctaga aggaataata ctatcactgt tcattatagc 120
 tactctcata accctcaaca cccactccct cttagccaat attgtgccta ttgccatact 180
 agtctttgcc gcctgcgaag cagcggtagg 210

<210> 678
 <211> 383
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(383)
 <223> n = A,T,C or G

<400> 678
 gtaggagtca ggtagttagg gttaacgagg gtggttaagga tgggggggaat tagggaagtc 60
 aggggttaggg tgggtatagt agtgtnatg gttattagga aaatgagtag atatttgann 120
 aactgattaa tgtttgggnn tgagtnta tatcacagcc anaattntat gatgnaccat 180
 gtancgaaca atgctacagg gatgaatatt atggagaagt antctanttt gaagcttagg 240
 gagagctggg ttgtttgggt tgnngctcan tgtcagttcc anataataac ttcttgggtc 300
 aggacatga atattgttgt ggggaanaga ctgataataa aggtggatgc gacaatggat 360
 tttacataat gggggtatna gtt 383

<210> 679

<211> 371
 <212> DNA
 <213> Homo sapien

<400> 679
 aaaatgaaaa tattgacaag agtttcagat agaaaaatgaa aaacaagcta agacaagtat 60
 tggagaagta tagaagatag aaaaatataa agccaaaaat tggataaaat agcactgaaa 120
 aaatgaggaa attattggta accaatttat tttaaaagcc catcaattta atttctggtg 180
 gtgcagaagt tagaaggtaa agcttgagaa gatgagggtg tttacgtaga ccagaaccaa 240
 tttagaagaa tacttgaagc tagaagggga agttggttaa aaatcacatc aaaaagctac 300
 taaaaggact ggtgtaattt aaaaaaact aaggcagaag gcttttggaa gagttagaag 360
 aatttgaag g 371

<210> 680
 <211> 176
 <212> DNA
 <213> Homo sapien

<400> 680
 cctaggattg tgggggcaat gaatgaagcg aacagatttt cgttcatttt ggttctcagg 60
 gtttggtata attttttatt tttatgggct ttggtgaggg aggtaagtgg tagtttgtgt 120
 ttaatatatt tagttgggtg atgaggaata gtgtaaggag tatgggggta attatg 176

<210> 681
 <211> 152
 <212> DNA
 <213> Homo sapien

<400> 681
 ctggagatgg atatgagact agtcaagatg tgaatgctaa ttggagagaa atataatttt 60
 aggaagatgc acattgatgt ggggttttga tgtgtctgat tttgactact caagctctgt 120
 ttacagaaga aaattgaatg gcgagggtgt gg 152

<210> 682
 <211> 141
 <212> DNA
 <213> Homo sapien

<400> 682
 ccagtgttg cttgccgtgg tttagtatt ggggtgttaga aataaaaaact caggctctatt 60
 tcttaccagt cagtaacaat ttttagagaa tgtacttggg atataatata tggacttcag 120
 gaactttgtt ggggtggggg g 141

<210> 683
 <211> 308
 <212> DNA
 <213> Homo sapien

<400> 683
 ccagcaatgg tacagagtga ggggtgttctg ctaatgactt cagagaagta ttttaagaaaa 60
 acatagaaaa acgtgtgctg agtttgccag aaatagatgg cttgagcaaa gagacagtgt 120
 tgagctcatg gatagccaaa tatgatgcca tttacagagg tgaagaggac ttgtgcaaac 180
 agccaaatag aatggcccta agtgagctgt ctgaacttat tctgagcaag gaacaactct 240
 atgaaatgtt tcagcagatt ctgggtatca aaaaactaga acaccagctc ctttataatg 300
 catgtcag 308

220

<210> 684
 <211> 277
 <212> DNA
 <213> Homo sapien

<400> 684
 tgggtattagg attaggatgt gtgaagtata gtacggatga gaagggtggg gaacagctaa 60
 atagggtgtt gttgatttgg ttaaaaaata gtagggggat gatgctaata attaggctgt 120
 ggggtgggtgt gttgattcaa attatgtgtt ttttggagag tcatgtcagt ggtagtaata 180
 taattgttgg gacgattagt tttagcattg gagtaggttt aggttatgta cgtagtctag 240
 gccatatgtg ttggagattg agactagtag ggctagg 277

<210> 685
 <211> 457
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(457)
 <223> n = A,T,C or G

<400> 685
 ctgtggcgtn ccttacttct cccaaacctc gcaactccct cccaggacag tcagtgccaa 60
 agaaacaggt cgctgaaaac taaaaatgtcc acatccctaa ctggcaaccc acatcaaccc 120
 caaaagggttg aagaatcatc taagatattt cagatgctct atgaagaaat tcactttaac 180
 acttataact gtaagacttt gcatacatta caacagtgc ttagtgatac aagttgtaaa 240
 atacgtttcc attccttttg attttgcata tgatggtttt gcatacagtca ctgcaggtag 300
 attgagcaag ctttttgtgt ttgttttttt aaacatgcat tcaactagat atgattcaga 360
 atagattaat actccctttt taccactaca gttagctaaa aaattgccag gcagtcaca 420
 aaacagaatt tgctttaaga ccaaccacac gagtcag 457

<210> 686
 <211> 234
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(234)
 <223> n = A,T,C or G

<400> 686
 ntggatttat aaaatagttg caatgacaaa agaagtatgt tttgacagta aaaaaaagac 60
 attatggaca aaatatgcaa aatgtgcaaa gaaaaaataa atttgcatta gaaagggtggg 120
 catttgatct ctgagccctg tgccatgtaa cattgccatg ttctttcact gttgtttgaa 180
 tgttgtaccc cagcccttga ctctggactt aaggcaagct atgactggct ttgg 234

<210> 687
 <211> 315
 <212> DNA
 <213> Homo sapien

<220>

221

<221> misc_feature
 <222> (1)...(315)
 <223> n = A,T,C or G

<400> 687
 nngtctgtga aaaactcttt ggatgattct gccaaaaagg tacttctgga aaaatacaaaa 60
 tatgtggaga atttttgtct aattgatggc cgcctcacca tctgtacaat ctctgtttc 120
 tttgccatag tggctttgat ttgggattat atgcaccctt ttccagagtc caaaccctt 180
 ttggctttgn gtgtcatatc ctattttgtg atgatgggga ttctgaccat ttataacctca 240
 tataaggaga agagcatctt tctcgtggcc cacaggaaaag atcctacagg aatggatcct 300
 gatgatattt ggacag 315

<210> 688
 <211> 522
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(522)
 <223> n = A,T,C or G

<400> 688
 ctgaattaga ggaggagaaa agaagccatt nnggagtact ttaattgttt agatgtgaga 60
 ggctgaatgt ttgggttaag atgttagttg tcagaatcat gagaaaagg ttttaagcaag 120
 gggcatttct aattctaaaa ataacaacta ctgttattta ttgagcacta tctttttgtt 180
 gggtagtgc taaagtactt gatttatttt ttaaaacctt acaaaaaact tacaaggtag 240
 gtactgaaag attcagtaat ttgttcaaag tcacacagca aataagcaac agactctgga 300
 tttgaaccag gcaatcctag agcctgtact gttagtaatt atacttttagc acctgtcaag 360
 aattcctgtt gagtgtcaag aagcaanca caagtttagga ttttaagcaa acatgattga 420
 agaatactgt ggtgtggttg acagtagtgc ctaagtctgt tttcagagtg aaaaatgaca 480
 aattagattt taagtatggg ttggagataa tatcaggaca gt 522

<210> 689
 <211> 158
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(158)
 <223> n = A,T,C or G

<400> 689
 tctcaactta ntntnatacc cacacccacc caanaacagg gtttgtagg nattgtttgc 60
 attaataaat taaagctcca tagggctctc tcgtcttgct gtgtcatgcc cgcctcttca 120
 cgggcaggct aatttcactg gttaaaagta agagacag 158

<210> 690
 <211> 300
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature

222

<222> (1) ... (300)

<223> n = A,T,C or G

<400> 690

tagaactcgt	atTTTTaaac	ttctattctc	tanccttttc	cactacatta	tgacacaaga	60
ccctgcagaa	agtcgtctgg	aaaatatcag	accatctctt	acttgtccca	tccaatctta	120
catcgaatta	tatgcaccct	taaaaagtta	tttggagttt	taaaaaactc	tattagccca	180
aattacctga	aataaaactcc	tggcttgttc	ccctaagtgt	tataaaaaat	tgattgaaaa	240
tattcatttt	aaaaatgaag	ntcttgaatt	tatttaaatt	actgtcttgc	agtgagttgg	300

<210> 691

<211> 305

<212> DNA

<213> Homo sapien

<400> 691

ctgttcagaa	agctcattgg	acctggtttt	gaaaataaaa	caaagttaaa	accctgggag	60
gagttattgt	gcagtgtgga	gtactcaggc	tttcttataa	agaaaaaaaa	agttatctgg	120
taccaaagt	tgcaacctac	agaccctcag	gtactgccct	gtgacttctc	tgtatgacat	180
cacaaggctg	ccaagtgcct	gtttttctag	aactaggagt	tggtgaggtt	tggttagtgc	240
tgaaaccatg	cataggattg	gtttactaaa	ttaaaacctt	attacgtacg	tcctccaaaa	300
gacag						305

<210> 692

<211> 582

<212> DNA

<213> Homo sapien

<400> 692

caggaaatgg	ataaccattt	taactgtatt	ttttgcagcc	cgtaccttct	tggaataaca	60
attgtctaac	tttttatttt	tggctctggc	gttgtggtgt	gcaaaaactcc	gtacattgct	120
attttgccac	actgcaacac	cttacagatg	tggaagatgt	gaaatttgct	atcaattatg	180
actaccctaa	ctcctcagag	gattatattc	atcgaattgg	aagaactgct	cgcagtacca	240
aaacaggcac	agcatacact	ttctttacac	ctaataacat	aaagcagggtg	agcgacctta	300
tctctgtgct	tcgtgaagct	aatcaagcaa	ttaatcccaa	gttgcttcag	ttggtcgaag	360
acagaggtgc	aggtaaggat	gactgatagg	aaatgttggt	agttacgagt	cacatcgttg	420
tctacaaatc	catttaaattg	gtattggagg	gtgagtaaaa	ccttgaatgt	gaaaacttaa	480
gctgaaaaat	tgtaaaaaaca	tttcacgcct	accatgaata	gatctgtttc	tttctgtcca	540
caatgatttg	tgatcatagac	ataattgata	aatttgcaat	tg		582

<210> 693

<211> 275

<212> DNA

<213> Homo sapien

<400> 693

ccaattgatt	tgatggtaag	ggagggatcg	ttgacctcgt	ctgttatgta	aaggatgcgt	60
agggatggga	gggcgatgag	gactaggatg	atggcgggca	ggatagtcca	gacggtttct	120
atttcctgag	cgtctgagat	gttagtatta	gttagttttg	ttgtgagtg	taggaaaagg	180
gcatacagga	ctaggaagca	gataaggaaa	atgactatga	gggcgtgatc	atgaaagggtg	240
ataagctctt	ctatgatagg	ggaagtagcg	tcttg			275

<210> 694

<211> 397

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (397)

<223> n = A,T,C or G

<400> 694

nggtctgcat	ttttattgcg	atctgcagat	gaactggaaa	atctcatttt	acaacagAAC	60
tgagacagac	gaccaccata	ttcactgagg	tctaaatttg	cagtttccac	taatgacatt	120
ttgatttccc	aacagagata	cttctggtct	tactgcacag	tcttttaaga	gaaatacttc	180
cattatgccA	cattgtcctt	gatccgtaag	tgatgtgtta	aggtgcttca	aaggaactct	240
gacctctgaa	gtacttgagc	tactttagta	tgtccagcct	attgcttttt	gttttagtgt	300
gtcaccataa	atatcagggg	cataaaaggc	tatctattct	taattcaagg	ataaaacaga	360
agaagcttgt	ggtataaaac	aatagttaa	gatccag			397

<210> 695

<211> 609

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (609)

<223> n = A,T,C or G

<400> 695

ctgagcttcc	atttgtcagc	tagcactgng	gtagtcaacc	atgcgaatga	ggctattttg	60
gacctcatga	ttgtccagtg	cctgggctga	taccgnggga	aacgaaattt	tgtggctgcc	120
cacaaaatca	tggaataata	tgatttttta	gaaaacctcc	actgntttgt	tgtgcagcaa	180
taataaactg	aaacaccaat	ccaaaaaact	tataaagcta	taacaattaa	aacagnataa	240
taatagtncC	gggatacaaa	aatgggtcaaa	ttgaagagga	tacaaagcct	caaagcagtc	300
ctcactcata	ananccttgt	tgtatcacta	aaanggcatt	aaaattgaga	anaaggaana	360
actagtggat	taattaataa	atgagaagta	tccataagga	aaaattaaaa	ttnnattctt	420
gcttcacatt	atgaaaaaat	acaaacaaca	gattgattaa	agacttaaat	gngatcaaca	480
aaatgttaaa	actgtgataa	gaacatttaa	gaaaatagtt	ctatnaccct	gggataaaac	540
attttcntcc	aaggcattaa	agtgttaaat	gaaaagactg	atncatttat	tcattagaat	600
ttaaattcn						609

<210> 696

<211> 300

<212> DNA

<213> Homo sapien

<400> 696

ctgcaaaata	agcgtgctaa	attaaattgt	cttaaggttt	ttccacttca	ttttgtgact	60
ttgtgtgggt	cgaatttctc	agtattttta	ccagtgtgtt	gatgttaaag	tcaaaggctg	120
cagtatgtct	atattcttgc	tgtactcatt	ggtagtttca	gtatatgtaa	tgtgagttta	180
aatagtgaAA	ttgtatctca	tattaacatt	tcaaagtctc	atattgaaaa	tggaaaatag	240
taaacacggg	aattgatttt	attctgggtg	tctataatac	ttcattttta	atgtaaattg	300

<210> 697

<211> 391

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(391)

<223> n = A,T,C or G

<400> 697

nngtcatgtn	tgatgnatct	gancagggtg	ctccacaggt	agctctagga	gggctggcaa	60
cttagagggtg	gggagcagag	aattctctta	tccaacatca	acatcttgg	cagatttgaa	120
ctcttcaatc	tcttgcactc	aaagcttggt	aagatagtta	agcgtgcata	agttaacttc	180
caatttacat	actctgctta	gaatttgggg	gaaaatttag	aaatataatt	gacaggatta	240
ttggaaattt	gttataatga	atgaaacatt	ttgtcatata	agattcatat	ttacttctta	300
tacatttgat	aaagnaaggc	atggttggtg	ttaatctggt	ttatttttgn	tccacaagtt	360
aaataaatca	taaaacttga	acaaaaaaaa	a			391

<210> 698

<211> 536

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(536)

<223> n = A,T,C or G

<400> 698

ctgagcatac	agcaataaaa	ataacataat	ttttatgtgt	acaatattta	tggaatacgt	60
tactggaaca	gataaataat	ttagttaata	acatgacaaa	gaacagaaat	tgtatacact	120
atacagcata	gtaatagaat	aatgaatgat	taaagttatt	aatattaggt	agaaaatgaa	180
gggtatcttt	gagagcagaa	ctcaaggaag	caagcaattt	gccttatgag	gaaagagtta	240
cctgtggata	aaggagaaac	tgaaaaattt	acaagtcaag	actttttgag	caaagacaaa	300
aatatgacta	tgagtcacca	attcagtaca	gtgaaaaaaa	agttgaagag	atatcttgga	360
agtaaaccat	gttgtggaag	agcagggttt	tgataatcat	gggattattc	tgaatgaatt	420
ttaaatgcga	taggaatata	tgagataatt	tcaccagaga	ataatatgat	catgtttgca	480
tttcaaaggg	gtgtatctgg	tgactgngt	agaataaata	ggntatgtga	gcaagt	536

<210> 699

<211> 419

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(419)

<223> n = A,T,C or G

<400> 699

ngtccacctg	agggcagggtg	acaaggacct	gacagagccc	atgcagggct	ttagatttgg	60
acacacaaga	gttgataact	tcctcatgaa	ctccttgcc	gatctaaact	catattatgg	120
gttctgactg	tttgagtaat	catcttcaag	gttaaacctc	ttggcagtta	cccttttcac	180
aaagtgcaca	gtgggaatcg	agaatcgata	gggttaattt	tgagcagtg	gcttatacca	240
ttcacctctg	tttttttgtg	attatttcac	agataatgag	accttaataa	caaataggcg	300
taaaaaaatt	ttcacattga	aatgatagaa	acatttgatg	taataaaaact	tggttggtct	360
gatattttta	ggaattgaaa	cctagcaatc	ttattggaga	gacaagaatt	ggtctccag	419

225

<210> 700
 <211> 336
 <212> DNA
 <213> Homo sapien

<400> 700
 ccacttattg tccttaaaaa tccatactga tacatggaca gfaagtgtgt tttcagatgg 60
 agtaccagca ccgaaaatgg gttgagggag gatgggttgt atgtatgttt ctgcccacta 120
 attttgagca gccatattat gaattaaatc gtcacagcca agtaataacc caagaatggg 180
 atgagtttca tgtgtaatag ctcaaagtga ataagcatga atgctggagt ggaccattat 240
 cctcaaatat tctatgtcac ttctcattta aagactcttg ttatgaacta ttagaaactt 300
 taggcaaaat caaaagtatt tgcggcaaaa taaagg 336

<210> 701
 <211> 418
 <212> DNA
 <213> Homo sapien

<400> 701
 ccatgtgatg atgttgacaa cccctgaaga gcctcagtc attgttccac gtttaagaac 60
 taggaatacc aggactgatg caattctact gggtcactat cgcttgtcac aagacacaga 120
 caatcagacc aaagtatttg ctgtaataac taagaaaaaa gaagaaaaac cacttgacta 180
 taaatacaga tatttttcgtc gtgtccctgt acaagaagca gatcagagtt ttcattgtggg 240
 gctacagcta tgttccagt gtcaccagag gttcaacaaa ctcattctgga tacatcattc 300
 ttgtcacatt acttacaaat caactggtag gactgcagtc agtgcttttg agattgacaa 360
 gatgtacacc cccttgttct tcgccagagt aaggagctac acagctttct cagaaagg 418

<210> 702
 <211> 261
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1) ... (261)
 <223> n = A,T,C or G

<400> 702
 gggcctgttg tgggggtggg ggaagcaggg aggggaacag ctaaataagg tgcgtgtgat 60
 ttggttaaaa aatagtaggg ggatgatgct aataattagg ctgnnggtgg ttgtgttgat 120
 tcaaattatg tgttttttgg agagtcagtg cagtggtaga aatataattg ttgggacnat 180
 tagntttagc attggagtag gtttaggtta tgtacgtagt ctaggccata tgtgttggan 240
 attgagacta gtagggctag g 261

<210> 703
 <211> 261
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1) ... (261)
 <223> n = A,T,C or G

<400> 703

226

```

gggcctgttg tgggggtggg ggaagcaggg aggggaacan ctaaataagg tgcgtgtgat      60
ttggttaaaa aatagtaggg ggatgatgct aataattagg ctgnggggtgg ttgtgttgat      120
tcaaattatg tgttttttgg agagtcacgt cagtggtagt aatataattg ttgggacnat      180
tagnttttagc attggagtag gtttaggtta tgtacgtagn ctaggccata tgtgttgagg      240
attganacta gtagggctag g                                     261

```

<210> 704

<211> 381

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(381)

<223> n = A,T,C or G

<400> 704

```

ngtntgaatt ctattaaaga tacaaagagg agctggtacc atttcttctg aaactattac      60
aaacaactga aaaggtggaa tttctcccta attcatttta ggaggccagc attatactga      120
taccaaaacc tggcagaggt acaataataa aaggaaactt caagtcagta tcaactgatga      180
acaccaatgt gaaaatcctc aataaaaatac tggcaaaactg aattcagcag cacatcaaaa      240
agctaatacca ccacaatcaa gtcagcttca tccctgcgat gcaagtcctg ttcaacatat      300
gcaaatcaat aaatacaatt catcagataa acagagctaa agacaaaatt cacatgattt      360
tctcaataga tgcagaaaag g                                     381

```

<210> 705

<211> 477

<212> DNA

<213> Homo sapien

<400> 705

```

ctgaaccctc gtggagccat tcatacaggt ccctaattaa ggaacaagtg attatgctac      60
ctttgcacgg ttagggtacc gcggccgtta aacatgtgtc actgggcagg cggtgcctct      120
aatactggtg atgctagagg tgatgttttt ggtaaacagg cggggtaaga tttgccgagt      180
tccttttact ttttttaacc tttccttatg agcatgcctg tgttgggttg acagtgaggg      240
taataatgac ttgttggtga ttgtagatat tgggctgtta attgtcagtt cagtgtttta      300
atctgacgca ggcttatgcg gaggagaatg ttttcatggt acttatacta acattagttc      360
ttctataggg tgatagattg gtccaattgg gtgtgaggag ttcagttata tgtttgggat      420
tttttaggta gtgggtgttg agcttgaacg ctttcttaat tgggtggctgc ttttagg      477

```

<210> 706

<211> 266

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(266)

<223> n = A,T,C or G

<400> 706

```

ccatggctag gtttatagat agttgggtgg ttggtgtaaa tgagtgaggc aggagtcgga      60
ggagggtagt tgtggcaata aaaatgatta aggatactan tataagagat caggntcgtc      120
ctttagtgtt gtgtatggct atcatttgtt ttgaggntag tttgattagt cattgttggg      180
tggttaattag tcggttggtg atgagatatt tggagggtggg gatcaataga gggggaaata      240

```

227

gaatgatcag tactgcggcg ggtagg

266

<210> 707

<211> 358

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(358)

<223> n = A,T,C or G

<400> 707

ccatcagaga aatgcaaattc aaaaccacaa tgagatacca tctcacacca gttagaatgg	60
caatcattaa aaagtcagga aacaacaggt gctggagagg atgtggagaa ataggaacac	120
ttttacaccg ntgggtgggac tgtaaaactag ttcaaccatt gtggaagtca gtgtggcgat	180
tcctcaagga tctagaacta gaaataccat ttgaccagc cggccaatat tcaacattct	240
taaaggaaag aattttcaac ccagaatttc atatccagcc aaactaagct tcgttagtga	300
aggagaaata aaatacttta cagacaagca aatactgaga gattttgtca ccaccagg	358

<210> 708

<211> 491

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(491)

<223> n = A,T,C or G

<400> 708

cctactatgg gngttaaatt ttttactctc tctacaaggt tttttcctag tgtccaaaga	60
gctgttcctc tttggactaa cagttaaatt tacaagggga tttagagggt tctgtgggca	120
aatttaaagt tgaactaaga ttctatcttg gacaaccagc tatcaccagg ctcggtaggt	180
ttgtgcctc tacctataaa tcttcccact attttgctac atagacgggt gtgctctttt	240
agctgttctt aggtagctcg tctggtttcg ggggtcttag ctttggtctt ccttgcaaag	300
ttatttctag ttaattcatt atgcagaagg tataggggtt agtccttgct atattatgct	360
tggttataat ttttcatctt tcccttgccg tactatatct attgcgccag gtttcaattt	420
ctatcgccca tactttatctt gggtaaatgg tttggctaag gttgtctggt agtaagggng	480
gagtgggttt g	491

<210> 709

<211> 460

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(460)

<223> n = A,T,C or G

<400> 709

nggttttttt tgtagagcaa ataatttatg caaaatatgt tacaaaatct gggatgctaa	60
atagttgaca caagtactgt gtttgacatt tagtttcatt tgaattagta atagaatttg	120
ctccttccaa catttacatc ttttttcttt ctgactttat atattttcaa taaaaatttg	180

228

ctccacagtt	tttaagntca	ttcttcttga	atccgntttt	acatttgctg	ngacaaacct	240
gcataaaact	agattttata	gatataactt	ctttggaaga	gataaaaatt	caaaagtgtg	300
acattgcttt	cantttattct	tttcttcatt	gttttgattg	gcccctgta	gattgatgta	360
ttgccaatct	acttttgatg	gcatgaatnt	aaaatgacaa	cataaaaagc	ncttctagt	420
caacagtaat	tgaacttgc	agttttccat	taaaaaaaaa			460

<210> 710

<211> 542

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(542)

<223> n = A,T,C or G

<400> 710

ctgttacagt	gacaagagat	aaaaagatag	acctgcagaa	aaaacaaact	caaagaaatg	60
tgttcagatg	taatgtaatt	ggagtgaaaa	actgtgggaa	aagtggagtt	cttcaggctc	120
ttcttggaag	aaacttaatg	aggcagaaga	aaattcgtga	agatcataga	tcctactatg	180
cgattaacac	tgtttatgta	tatggacaag	agaaatactt	gttgttgcat	gatatctcag	240
aatcggaatt	tctaactgaa	gctgaaatca	tttgngatgt	tgtatgcctg	gtatataatg	300
tcagcaatcc	caaactcctt	gaatactgtg	ccaggatttt	taagcaacac	tttatggaca	360
gcagaatacc	ttgcttaatc	gtagctgcaa	agtcagacct	gcatgaagtt	aaacaagaat	420
acagtatttc	acctactgat	ttctgcagga	aacacaaaat	gcctccacca	caagccttca	480
cttgcaatac	tgctgatgcc	cccagtnagg	atatctttgt	taaattgaca	acaatggacc	540
tg						542

<210> 711

<211> 394

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(394)

<223> n = A,T,C or G

<400> 711

caaaccact	ccaccttact	accagacaac	cttagccaaa	ccatttacc	aaataaagta	60
taggcgatag	aaattgaaac	ctggcgcaat	agatatagta	ccgcaaggga	aagatgaaaa	120
attataacca	agcataatat	agcaaggact	aaccctata	ccttctgcat	aatgaattaa	180
ctanaaataa	ctttgcaagg	agagccaaa	ctaagacccc	cgaaaccaga	cgagctacct	240
aagaacagct	aaaagagcac	acccgtctat	gtagcaaaat	agtgggaaga	tttataggna	300
gaggcgacaa	acctaccgag	cctggtgata	gctggttgct	caagatagaa	tcttagttca	360
actttaaatt	tgccacaga	accctctaaa	tccc			394

<210> 712

<211> 552

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(552)

<223> n = A,T,C or G

<400> 712

gaggtctgta	naatgccagg	ctcaaatttg	tctttataat	ttaataccag	aaatctttcc	60
cttgtgatgt	ttctttcttt	ctggattgcc	tctatagcag	gggatagcgg	gggaggataa	120
ggcacatctt	tgntgtactg	agaaatttga	ccacgcagga	tgatgtggct	gttctcattc	180
atctgcacag	agaaaaataa	tgataaaata	tccctttcct	atgtttactg	attttatggc	240
tgccataatg	gaagcctcct	tgactattta	atcctttctg	tcaactaggt	tcgatttttt	300
ttttaattta	cctgttagag	gtatttaana	attttaacta	gctanaaata	attacattcc	360
aaaggaacac	caaggcaaata	aaatggttgg	taatcagcaa	aagaattaca	ttagttggtg	420
ntgctactta	ttagggggag	aactgttttt	ttttaaaatt	aaacaattta	ataatctcaa	480
ctgcaaataa	ttttagatgc	agcaaaggac	tatgtagncg	ttaatacctc	atgttgatat	540
tttcataata	tt					552

<210> 713

<211> 518

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1) ... (518)

<223> n = A,T,C or G

<400> 713

ccaaaaactg	gaagcagctc	actaaacaaa	cagtggcata	cccatagaac	tgcatacttc	60
tcagcagtat	gaaagaatga	gctacttata	taagcatcat	tgataaacct	caaaaaaaaaa	120
atgccacatg	aanaaaaccca	aagggganaa	acataaaaac	tttatatgtc	agtcataataa	180
aattctanaa	aatgcaaact	aatccatcnt	aaaggaaagt	aaatcaacag	ttgtctggag	240
gaccananag	agcaggagga	ganagattat	taaaggggtt	aaagtaaatt	tgggagtgcc	300
cttccttttt	taaatnctat	gaaaaatgaa	gtaaaggcnc	atgcatgttg	taaactaata	360
gtaacaaaca	naatgggttg	gagtgggttg	ttgtctgggg	acatcattac	aaaatgtaag	420
ccagtttatn	taaattttga	aaagaccgtg	gactctgatc	tgactgatna	atgttggaag	480
agataagtgt	gctgcaaata	ggggaattaa	taaaacag			518

<210> 714

<211> 281

<212> DNA

<213> Homo sapien

<400> 714

ccaattgatt	tgatggtaag	ggagggatcg	ttgacctcgt	ctgttatgta	aaggatgcgt	60
agggatggga	ggcgatgag	gactaggatg	atggcgggca	ggatagttca	gacggtttct	120
atttcctgag	cgtctgagat	gttagtatta	gttagttttg	ttgtgagtgt	taggaaaagg	180
gcatacagga	ctaggaagca	gataaggaaa	atgactatga	gggcgtgatc	atgaaagggtg	240
ataagctctt	ctatgatagg	ggaagtagcg	tcttgtagac	c		281

<210> 715

<211> 443

<212> DNA

<213> Homo sapien

<400> 715

cttgaaatca	gcaacacact	tacaaatgag	aaaatgaaaa	tagaagagta	tataaagaaa	60
gggaaagagg	attatgaaga	gagtcacag	agagctgtgg	ctgcagaggt	atccgtactt	120

230

```

gaaaactgga aggagagtga agtgtataag ctacagatca tggagtcaca agcagaagcc 180
tttctgaaga agctggggct gattagccgt gatcctgcag catatcccga catggagtct 240
gatatacgtt catgggaatt gtttctttct aatgttacaa aagaaattga gaaagcaaag 300
tctcagtttg aagaacaaat taaggcaatt aaaaatgggt cccggctcag tgaactttct 360
aaagtgcaga tttctgagct ttcatttctt gcctgtaaca cggttcatcc cgagttactc 420
cctgagtcctt caggccacga tgg 443

```

<210> 716

<211> 639

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(639)

<223> n = A,T,C or G

<400> 716

```

ccaaanaaaaa tgaagtacag agtctgcata gtaagcttac agataccttg gtatcaaaac 60
aacagttgga gcaaagacta atgcagttta tggaatcaga gcagaaaagg gtgaacaaaag 120
aagagtcctt acaaatgcag gttcaggata ttttgagca gaatgaggct ttgaaagctc 180
aaattcagca gttccattcc cagatagcag cccagacctc cgcttcagtt ctagcagaag 240
aattacataa agtgattgca gaaaaggata agcagataaa acagactgaa gattccttag 300
caagtgaacg tgatcgttta acaagtaaag aagaggaact taaggatata cagaatatga 360
atttcttatt aaaagctgaa gtgcagaaat tacaggccct ggcaaatgag caggctgctg 420
ctgcacatga attggagaag atgcaacaaa gtgtttatgt taaagatgat aaaataagat 480
tgctggaaga gcaactacaa catgaaatct caaacnaaat ggaagaattt angattctaa 540
atgacaaaaa canagcatta aaatcagaag ttcagaagct gcagactcct gtttctgcac 600
angcctaata aggatgntgn ggaacaaatg gaaaaattg 639

```

<210> 717

<211> 473

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(473)

<223> n = A,T,C or G

<400> 717

```

nntgaggcta ctgctgtttt attacaacat tacctcttgt ttttataaag tgtaccaaga 60
tttaaattga taactttatt ttacttgaaa aaaaaaagtt tnttttatca ccagtgttac 120
agttgtcttc tgtttctttt tgttttgntt tatttgnttt cctttttagc caaagagtga 180
acagaanatt ttcttatttt ggtggctatt cattttactt ttaaaagtga ttggtggatt 240
ttagactaat tatgggggaa tttgccacca aaataaaaaa tatgtaaagn gtagtgatta 300
cagagtgggt aaaatgtggg ttagtactta ttattccat taattgatta tttgactgtt 360
tataaagaaa gttgctttat ttctttaaac atcttcaaaa gatgatcctt tcttgtcaca 420
ttatagccaa aagaagcaga gaacttcact gtctgcattt gggttcctggt tgg 473

```

<210> 718

<211> 207

<212> DNA

<213> Homo sapien

<400> 718
 ggtaaagtct agtataatat ttaccatctc acttctagga atactagtat atcgctcaca 60
 cctcatatcc tccctactat gcctagaagg aataatacta tcactgttca ttatagctac 120
 tctcataacc ctcaacaccc actccctctt agccaatatt gtgcctattg ccatactagt 180
 ctttgccgcc tgcgaagcag cggtagg 207

<210> 719
 <211> 255
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(255)
 <223> n = A,T,C or G

<400> 719
 cctatattac ggatcatttc tctactcaga aacctgaaac atcggcatta tctccttgct 60
 tgcaactata gcaacagcct tcataggcta tgtcctcccg tgaggccaaa tatcattctg 120
 agggggccaca gtaattacaa acttactatc cgccatccca tacattggga cagacctagt 180
 tcaatgaatc tgaggaggct actcagtaga cagncccacc ctacacgat tctttacctt 240
 tcacttcac tggcc 255

<210> 720
 <211> 455
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(455)
 <223> n = A,T,C or G

<400> 720
 ccaatgtcga aacctacaag atttccttaa aatctcta atagaggcatta cttgctttca 60
 attgacaaat gatgccctct gactagtaga tttctatgat ccttttttgt cattttatga 120
 atatcattga ttttataatt ggtgctatgt gaanaaaaaa atgtacattt attcatagat 180
 agataagtat caggtctgac cccagtggaa aacaaagcca aacaaaactg aaccacaaaa 240
 aaaaaggctg gtgttcacca aaaccaaact tggttcattta gataatttga aaaagctcca 300
 tagaaaaggc gtgcagtact aagggaacaa tccatgtgat taatgnttnc attatgttca 360
 tgtaanaagc cccttatttt tagccataat tttgcatact gaaaatccaa taatcagaaa 420
 agtaattttg ccacattatt tatnaaaaat gttcc 455

<210> 721
 <211> 530
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(530)
 <223> n = A,T,C or G

<400> 721
 ccagtgtctg ctgccgtggg ttagtgattg ggtgttagaa ataaaaactc aggtctattt 60

232

```

cttaccagtc agtaacaatt tttagagaat gtacttggtata tataatataat ggacttcagg 120
aactttattg gggngggggg ttaattttgc cttaccctgt tcactttcag atgattaggc 180
ttttgcactt tagaatgaga aacttgtgac gttagtgtgt tcttactagc ttttaatttgt 240
atgtagcaat gaattgtgaa tcttagtgca gtgggttttt ttaaaaaact caaaaagctg 300
ggaattaagt ggtttcagta ataatgctat accgaggtgc ttgcattgta tttcataatt 360
ttgttacaaa ccaaaattat ttttaatgan aacggctctg ggttcagagg tgtgatgcc 420
gaatgtattt tcgtactgtt aggcccttgg aacagatacc ggtgctttct tgaaagatga 480
aagaaatgca atgggtgctc ttcatgcaag gttgcaaacc taccaagaat 530

```

<210> 722

<211> 242

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(242)

<223> n = A,T,C or G

<400> 722

```

ccaaggggtca tgaatggcagg agtaatcana ggtgntcttg tgttgatgata agggngggaga 60
gggttaaagga gccacttatt agtaatgttg atagtagaat gatggctagg gtgacttcat 120
atgagattgt ttgggctact gctcgcagtg cgccgatcag ggcgtagttt gagtttgatg 180
ctcatcctga tnagaggatt gagtaaacgg ctaggctaga ggtggctaga ataaatagga 240
gg 242

```

<210> 723

<211> 472

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(472)

<223> n = A,T,C or G

<400> 723

```

cctactatgg gtgttaaatt ttttactctc tctacaaggt tttttcctag tgtccaaaga 60
gccgttcctc tttggactaa cagttaaatt tacaagggga ttttagagggt tctgtgggca 120
aatttaaagt tgaactaaga ttctatcttg gacaaccagc tatcaccagg ctcggtagg 180
ttgtcgcttc nacctataaa tcttcccact attttgctac atagacgggt gtgctctttt 240
agctgttctt aggtagctcg tctggnttcg ggggtcttag ctttggtctt ctttgcaaag 300
ttatttctag ttaattcatt atgcagaagg tataggggtt agtccttgct atattatgct 360
tggttataat ttttcatctt tcccttgccg tactatatct attgcgccag gtttcaattt 420
ctatcgctta tactttattt gggtaaatgg tttggctaan gttgtctggt ag 472

```

<210> 724

<211> 292

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(292)

<223> n = A,T,C or G

<400> 724

nccaccactg	cagccctaca	tacagntgaa	aaaaaattcc	attctgttaa	catttgtttt	60
ataagttttc	acncaatata	caaaaaaccc	ctctgcactt	cttgtaaaga	acaaaaaaga	120
tacacaacag	ttaagcgtaa	agatcacagg	caatagcatt	caaacatgga	tgtgggnaga	180
gaaaggagta	cctggcatga	gtacctgctt	agttngactg	aatccttgat	ttttaatttg	240
gcttttcatg	ggccgntcac	aacaccaacg	ctgngngagg	tatggtagtc	ag	292

<210> 725

<211> 122

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(122)

<223> n = A,T,C or G

<400> 725

atagaaaggg	catacccaaa	atgttactga	aaatntaata	caaattccaa	gattcaccaa	60
ngaagtaaca	aaaacctggc	ctgcangngg	nccctatcc	cgtggctcca	tggntgatgt	120
gg.						122

<210> 726

<211> 477

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(477)

<223> n = A,T,C or G

<400> 726

ctgaaccctc	gtggagccat	tcatacaggt	ccctaattaa	ggaacaagtg	attatgctac	60
ctttgcacgg	ttaggtacc	gcggccgtta	aacatgtgtc	actgggcagg	cggtgcctct	120
aatactgggtg	atgctagagg	tgatgttttt	ggtaaacagg	cggggtaaga	tttgccgagt	180
tccttttact	ttttttaacc	tttccttatg	agcatgcctg	tgttgggttg	acagtgaggg	240
taataatgac	ttgttggtga	ttgtanatata	tgggctgtta	attgtcagtt	cagtgtttta	300
atctgacgca	ggcttatgcg	gaggagaatg	ttttcatgtt	acttatacta	acattagttc	360
ttctataggg	tgatagattg	gtccaattgg	gtgtgaggag	ttcagttata	tgtttgggat	420
tttttaggta	gtgggtgttg	agcttgaacg	ctttcttaat	tggcggctgc	ttttagg	477

<210> 727

<211> 416

<212> DNA

<213> Homo sapien

<400> 727

cctgtctttg	aatggatgaa	ataggttaat	aaaaaacatc	actgtttaaa	aactagaaca	60
ctgaaaaatt	ctaggaaagc	ttattttccc	ttatatTTTT	atgggtacttt	caacacttaa	120
taacactatt	tcaattaagt	tttctcctag	agtttatagt	atatcagtac	attcttttct	180
gtggatgcaa	taatatagaa	tcttattcca	aactcttactg	gcaggttctc	ttaaattctt	240
caacggctgc	catagtgatt	aaccaaaatt	agttatgatt	tctgcctatc	tgtgtgagaa	300
cttacagggg	aaattgttct	aaacctgagg	aacatgaagt	aactgtactg	cacactccaa	360

atgatgacag tcattttata tcaccttcaa ttaccaaca gcttttaata gtctgg 416

<210> 728

<211> 416

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(416)

<223> n = A,T,C or G

<400> 728

cctgtctttg	aatggatgaa	ataggttaat	aaaaaacatc	actgtttaaa	aactagaaca	60
ctgaaaaatt	ctaggaaagc	ttattttccc	ttatattttt	atggactttt	caacacttaa	120
taacactatt	tcaattaagt	tttctcctag	agtttatagt	atatcagtac	attcttttct	180
gtggatgcaa	taatatagaa	tcttattcca	aatcttactg	gcaggttctc	ttaaattctt	240
caacggctgc	catagtgatt	aaccaaatt	agttatgatt	tctgcctatc	tgtgtgagaa	300
cttacagggg	aaattgttct	aaacctgagg	aacatgaagt	aactgtactg	cacactccaa	360
atgatgacag	tcattttata	tcaccttcaa	ttaccaaca	gcttttaata	ntctgg	416

<210> 729

<211> 564

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(564)

<223> n = A,T,C or G

<400> 729

ctgtgagtag	aggagtcttc	ccgagagtag	cagttgttga	tccaaatgat	tgaagccttc	60
aggtaagggg	ataactgctg	caggaattct	ttcttgaaga	atttaagctg	tttggtgaaga	120
attctgtaac	tacatacctt	tgaaacacta	ttcacattca	aataaacgct	tgttttctag	180
ccaggcacag	gctcaattag	tttttcaaac	tctagccaag	gcagtatttc	atttgggaaa	240
tcatgcaaca	gaactgctca	attcttaact	tctcctgctg	ttaacattta	cacttagact	300
gccagcaaca	gttaacttaa	attttgggtc	caagggaaca	aaaaaaaatt	gcattcagaa	360
tttaatatag	tatttttaaaa	ctaattttag	cctgtaagnc	attatgagca	atagtaactt	420
ttatacctcc	tcatcttgnc	tgataatata	ttctatatgc	tgncaatctg	attatatagt	480
ctatatgcta	gaagttgctg	attttcattc	tgccaccaa	aaaaactgtc	cttttttttt	540
tatgggggaa	aaaggggaatt	taaa				564

<210> 730

<211> 310

<212> DNA

<213> Homo sapien

<400> 730

ccatttttat	ttcttcttca	gagaagtgtt	tatttaggtc	tggtgcccac	tttacaatta	60
ggccatatgt	tttcttgctg	ttgagttgta	tgtgtgtttg	tataaatttt	gcataattaac	120
cccttatcac	acgtatgttt	tttaaaataa	attttgctta	ttaatctttt	atcagatgta	180
tggtttccaa	atatattctt	ccgatccatg	gattctcttt	tttgttatga	ttgtttcttt	240
gctcttcgga	agctttttgt	tttgttttgt	tattgttttt	actttgatat	agtcccattt	300
attgtttttg						310

235

<210> 731
 <211> 467
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(467)
 <223> n = A,T,C or G

<400> 731
 ngacaacctt agccaaacca ttaccctaaa taaagtatag gcgatagaaa ttgaaacctg 60
 gcgcaataga tatagtaccg caagggaaag atgaaaaatt ataaccaagc ataataaagc 120
 aaggactaac ccctatacct tctgcataat gaattaacta gaaataactt tgcaaggaga 180
 gccaaagcta agacccccga aaccagacga gctacctaag aacagctaaa agagcacacc 240
 cgtctatgta gcaaaatagn gggaagattt ataggnagag gcgacaaacc taccgagcct 300
 ggtgatagct ggttgtccaa gatagaatct tagntcaact ttaaatttgc ccacagaacc 360
 ctctaaatcc ccttgtaaat ttaactgnta gnccaaagag gaacagntct ttggacacta 420
 ggaaaaaacc ttgtagagag agtaaaaaat ttaacaccca tagtagg 467

<210> 732
 <211> 492
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(492)
 <223> n = A,T,C or G

<400> 732
 cctactatgg gtgttaaatt ttttactctc tctacaagggt tttttcctag tgtccaaaga 60
 gctgttcctc tttggactaa cagctaaatt tacaagggga ttttagagggt tctgtgggca 120
 aatttaaagt tgaactaaga ttctatcttg gacaaccagc tatcaccagg ctcggttagt 180
 ttgtcgccctc tacctataaa tcttcccact attttgctac atagacgggt gtgctctttt 240
 agctgttctt aggtagctcg tctggnttcg ggggtcttag ctttggtctc ctttgcaaag 300
 ttattttctag ttaattcatt atgcagaagg tataggggtt agnccttgct atattatgct 360
 tggntataat ttttcatctt tcccttgccg tactatatct attgcccag gtttcaattt 420
 ctatcgcccta tactttattt gggtaaatgg tttggctaag gttgtctggt agtgaggcgg 480
 agnggggttg gg 492

<210> 733
 <211> 562
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(562)
 <223> n = A,T,C or G

<400> 733
 ntgaaatggc aatagcattc actgtcgtat ttgagtgctc tcaggaagtg ggacgttaac 60
 tttgaagggt cttgttttga tttagctctgc taggtttacc tctacaacgt agatttcagc 120

236

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agctatgctg actgacacta cattctagtt ctttaagattt tttttccana tcccccttc 180
cccagctaga catacgtagc atactttcat cttattcagt ctttctgtaa cctgctgctg 240
cttttagtcc tctcacctc agatcggaat caatggagtg ggcccagagg atacatttta 300
attccagtaa tggtaggtag atttgcctg ctttctaaaa catctcctca tttcatattt 360
ccactccata ttgattccat aagggaaaaa taatgggtgn ttcctccttt agggaggcaa 420
tgcaaagagn gtggacatct tctaattctg aggaacagtn gttgatttcc cttgaaggag 480
cttacatatt gactgtnttt cacaataacc tgnttgcccc agntcaatcc ctcattttta 540
tacttaatgt tggtnctggg ct 562

```

<210> 734

<211> 265

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(265)

<223> n = A,T,C or G

<400> 734

```

nggtccagaa caagagaaat aactgcagaa aacacatatg gttggaaacc atgcgcttgt 60
gactttttct gttagcctatg ggagtggaca gagtgggtaa cccaagatgt ttttaagact 120
gactggacta agaatggcgt acttatagcc aactacttcc cccctaattgt gactgaaggg 180
attcataatg atcacaatta gcattacggt taagtatttt aggggtgacg tctaagctca 240
cacttgaaag gtatttatct aatgg 265

```

<210> 735

<211> 216

<212> DNA

<213> Homo sapien

<400> 735

```

atttaatacg tgctcactgc tcggcacgcg ctgaagctac agttaacaat cagtgaagcac 60
atattaaatg ataaaaataat gctgatggta aacattcata acagcagagt aagatttttg 120
cagttttgtg tctcggtaac ataactgtaa ccttagatga acacctatcc cttcatgatc 180
tgactttaga ggcaaggagt ttgtaacatc taatgg 216

```

<210> 736

<211> 285

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(285)

<223> n = A,T,C or G

<400> 736

```

ctgaaaggca acntggagac tagttagtct agtccccctca tattataaat tggatatgctg 60
aggccaggca gtaaatgtct atggagctct ccaatttaag gccagtttga ctccaagggt 120
agggttctta gtaaaatttt gtgattaaat tggaaactct aatttatttt tctatgngtt 180
tttggtacct aatcctcata agcaagccat atttcaaggc tgatcaatga aaacacaaaa 240
taccaaagct tcctttccct tccaaattta ctgacccttt gtcag 285

```

<210> 737

237

<211> 509
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(509)
 <223> n = A,T,C or G

<400> 737
 agangaagaa gangaagatt aagggaagaa tacatcggtc aagaagagct caacaaaaca 60
 aagcccatct ggaccagaaa tcccgcacgat attactaatg aggagtacgg agaattctat 120
 aagagcttga ccaatgactg ggaagatcac ttggcagtga agcatttttc agttgaagga 180
 cagttggaat tcagagccct tctatattgtc ccacgacgtg ctccctttga tctgtttgaa 240
 aacagaaaga aaaagaacaa catcaaattg tatgtacgca gagttttcat catggataac 300
 tngnaggagc taatccctga atatctgaac ttcattagag ggggtgnaga ctcgaggagat 360
 ctccctctaa acatatcccc tgagatggtg caacaaagca aaattttgaa agttatcang 420
 aagaatttgg gtcaaaaaat gcttanaact ctttactgaa ctggcggaag atnaagagaa 480
 ctncagana ttctatgagc agntctctt 509

<210> 738
 <211> 97
 <212> DNA
 <213> Homo sapien

<400> 738
 cagtgaattg aatcacgact ctatagggcg aattgggccc tctagatgca tgctcgagcg 60
 gccgccagtg tgatggatat ctgcagaatt cgccctt 97

<210> 739
 <211> 209
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(209)
 <223> n = A,T,C or G

<400> 739
 ccgncagtgt gatggatatt tgcagaattc gcccttagcg gcccgcccg gcagggtcct 60
 tatatatagt agcttagttt gaaaaaatgt gaaggacttt cgtaacggaa gtaattcaag 120
 atcaagagta attaccaact taatgttttt gcattggact ttgagttaag attatttttt 180
 aaatcctgag gactagcatt aattgacgg 209

<210> 740
 <211> 164
 <212> DNA
 <213> Homo sapien

<400> 740
 ccaagctaag ggtgacact gtgaatgcaa ctctaatagca gcctggcgta aatggctcta 60
 tgggcactaa ctttcaagtt aacacaaaca gaggaggtgg tgtgtgggaa tctggtgcag 120
 caaactccca gagtacatca tggggaagtg gaaatggcgc aaat 164

<210> 741
 <211> 514
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(514)
 <223> n = A,T,C or G

<400> 741
 ccagtcagaa ttgagatgtg ctgtgagtg aaaatacact caaatctaag acttagtatg 60
 gaagaaaaag aagataaggt gnttcattaa taatctttta tattgattac atgttgaaat 120
 gatattttta atatactggg ttacataaac tggtattaag attaattttg cttgtttctt 180
 ttttaatatg gctactagaa aattaaaaat tatgttggtg ttcacattat atttctgttg 240
 aacaatgtgg acatagataa tctacagtca ttacattagc cttagaattt agcatcatac 300
 ttttaagcac tctggggtac taacttgaac tcccagaaac ccataagcac actctgcata 360
 taaattattg caaaattcat tcttatctct ctgaaagata tgcatttttaa gggtaaaaag 420
 aattcacaaa atattganc ctttaacaaat gtcaattagt atatggagag agctaaagga 480
 cttcntgtag actggtncat tggggaaaaa caga 514

<210> 742
 <211> 439
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(439)
 <223> n = A,T,C or G

<400> 742
 gcaggtccta tgcatagtta ataaggnta taatctactc aacatggaaa atgggagcct 60
 atttgcaaac acacgagtaa ttaaagtacc aattctctct tagtttcttt ttttatagtt 120
 ggnttathtt gcaattataa atgntaaaca tccctagaga tgaaagttaa aatggctgat 180
 cacagatcag tagcaaaata caaattgaca attcaaaatt ataaataaaa ctctgttgag 240
 gatgttttaac tttgagcctc caaatttaag agctaagctt ggaagaaaca aatttatagg 300
 ttatatattcc ctcttaaat aaaaaacaaa ctctctctgg cagtagnttg tgaattcctt 360
 tcattgnaat gataccatga ttacaggatc aaaaatgctt aacttacttg ccattctgct 420
 cacatcatca cagttgttt 439

<210> 743
 <211> 275
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(275)
 <223> n = A,T,C or G

<400> 743
 cangacgcta cttcccctat catagaagag cttatcacct ttcatgatca cgccctcata 60
 gtcattttcc ttatctgctc cctagtcttg tatgcccttt tccaaacact cacaacaaaa 120
 ctaactaata ctaacatctc agacgctcag gaaatagaaa ccgtctgaac tatcctgccc 180

```

gccatcatcc tagtcctcat cgccctccca tccctacgca tcctttacat aacagacgag      240
gtcaacgatac cctcccttac catcaaatca attgg                                275

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<210> 744
<211> 295
<212> DNA
<213> Homo sapien

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<220>
<221> misc_feature
<222> (1)...(295)
<223> n = A,T,C or G

```

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<400> 744
ctgtncctttt aaaaaatctg gatgtttttt atttagtgat tgttcgacaa ttagctgctt      60
caaaacataa tgtgcattgc ttatgaatgc cttcatatac taatacagat actctgataa      120
tattacactc taataaggat aatgctgaat tttgaaagga cacaaaacat ctaatgccaa      180
tatatacatg attagccaac atctttgcta tcaagaccac tcgtttttta ataaagatgc      240
aagtgtcagt tgtagattat tgggatgaag ctaaattccc agaatgcagc agcag          295

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<210> 745
<211> 477
<212> DNA
<213> Homo sapien

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<220>
<221> misc_feature
<222> (1)...(477)
<223> n = A,T,C or G

```

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<400> 745
cgcgttactg tacatatgtc tagcaggaga caactggaaa tactaaacaa atactggaat      60
tcacattaca gacagacgaa accaacaatgg atgccacaca taacttcctt tgtagtttca      120
cagagagcct atttgtgggt gctcaggtgg ggtcatacat tgcttgacaga aatggcctga      180
tcatagctct atgaaacaat gaattcggaa tgaaatctta ccatgacacc tctctgtagg      240
aaagaaatgt tgcttcacgt gtgctaagtt gagataataa tatttcacat atttatatac      300
agagaatcac tctcaaattt aaccaagat aagcaatagg atttgggggt gacttgatca      360
catttctaac aacacttttc ttttttctag aggtcactct caaacactga tatatcacta      420
tagtttgagt gtanggattc agtaatcaaa ggttggttatt gcaaaagagc caggcag          477

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<210> 746
<211> 524
<212> DNA
<213> Homo sapien

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<220>
<221> misc_feature
<222> (1)...(524)
<223> n = A,T,C or G

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```

<400> 746
ctgtgaaatt ggggtgggag agccaaaata ctttacaact tcagaccgga gaaaaggcca      60
gaggtgtgaa gttagactct atgatgaaac agagtcgtct tttgcgatga catgttggga      120
taatgaatcc attctacttg cacagagctg gatgccacga gaaacagtaa tatttgcctc      180
agatgtaaga ataaattttg acaaatttgc gaactgcatg acagcaactg taatctcaaa      240

```

240

aaccattatt	acaactaatc	cagatatacc	agaagctaac	attctgctga	atTTtatacg	300
agaaaaataaa	gaaacaaatg	ttctggatga	tgaaattgac	agttatttca	aagaatccat	360
aaattttaagt	acaatagttg	atgtctacac	agntgaacaa	ttaaagggaa	aagctttgaa	420
gaatgaagga	aaagctgatc	cttcctatgg	catcctttat	gcctacattt	ccacactcaa	480
cattgatgat	gaaactcaaa	agtagttcga	aatagatggt	ccag		524

<210> 747

<211> 456

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(456)

<223> n = A,T,C or G

<400> 747

cctcagttct	tgattgtggt	tgacggggcg	tcaccatgaa	ggagcccat	tagtataaag	60
cttccaacct	tttctcttaa	tcgtttcttt	aatcttttaa	accatcttca	agtgcatagg	120
ggagtttccg	atgccagagg	atgaaagcaa	gtgctttctc	caccctctcc	tcccagagt	180
aaaacaaatc	cttttgctga	tacttgtttc	aaaagcatcc	attgtaaaag	ttctcagtga	240
cacaaaatac	tgagaggtaa	ctttttatca	atcaaaccac	atacccaat	ttaacacctt	300
tcagtgtctc	gaattcaact	gacagactaa	agggtgtttc	ctgtaacagt	ctgaaatatt	360
aagtgttttt	tttgttttgt	ttttaaatct	tatttcagaa	aacttcctct	nggggtagga	420
aagtacacat	gaagcagcaa	agtaacgaag	aaaaac			456

<210> 748

<211> 474

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(474)

<223> n = A,T,C or G

<400> 748

ccanaccagg	gaaccaaag	cagacagnga	agttctctgc	ttcttttggc	tataatgnga	60
caagaaagg	atcatctttt	gaagatgttt	aaagaaataa	agcaactttc	tttataaaca	120
gtcaaataat	caattaatgg	aataaataag	tactaaccac	cattttaacc	actctgtaat	180
cactacactt	tacataattt	ttatttnggn	ggcaaantcc	cccataatta	gtctaaaatc	240
caccaatcac	ttttaaaagt	aaaatgaata	gccaccaaaa	taagaaaatc	ttctgttcac	300
tccttggcta	aaaaggaaaa	caaataaaaac	aaaacaaaaa	gaaacagaag	acaactgtaa	360
cactggtgat	aaaagaaact	ttttttttac	aagtaaaata	aagttatcaa	tttaaattct	420
ggncacttta	taaaaacaag	aggtaatggt	gtaataaaaac	agcagtagcc	tcag	474

<210> 749

<211> 355

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(355)

<223> n = A,T,C or G

<400> 749

cctgggttnna	gnngctgact	gnaacctcca	cttcctgttc	tcaggcaatc	ctcctgcctc	60
agcctcctta	gtagctggga	ctacaggagt	gtgcaaccat	gcccactaa	ttttgtatt	120
tttaatagag	acagggtttc	accatgttga	tcaggttggt	ctccaactcc	tgacctcagg	180
tgatccacct	gtcccagcct	cccaaagtgc	tgggattaca	ggcatgagcc	accacgcccg	240
gnccaggata	aagtaaaaat	ttgtaagcac	acaaggccct	ttgcaacctg	gctcctgggt	300
actactttta	ncctcctgcc	ctcccaaagt	tntcactgt	ttttctanac	atacc	355

<210> 750

<211> 493

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(493)

<223> n = A,T,C or G

<400> 750

ccatgctggt	ctcgaactcc	tgaactcagg	tgatccaccc	gcctcagtct	cccaatagat	60
tacatatatt	attaatgaat	tgcttccttt	aacaccctat	tcattgaatt	ttccagtaaa	120
ccacaattac	taattactcc	tgaatcaga	aaagaggtta	aaaagatttt	ataacagtat	180
cctatgaaat	ctactacttt	caagtaatag	tagttgaatt	acaaaaaccc	gtcactcaag	240
ccaatgacta	caattaagat	atgagtaaca	tttcctagat	aaataaagtc	aattaattat	300
atttgcatct	gggaaataga	gaaagtacat	ataagccatg	attttgaagn	caaaagagag	360
agantatttg	ccaaggaggg	gtgagttata	gtatgtaatt	ataacataca	gaagcttttt	420
gtatgctggt	aactaatttt	aatttcctac	attnttatgg	agatttctgc	tattcttgtc	480
ctattttcca	cct					493

<210> 751

<211> 364

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(364)

<223> n = A,T,C or G

<400> 751

cgaggctctgg	naaggtcacc	aagtctgccc	aganagctca	gaaggctaaa	tgaatattat	60
ccctaatacc	tgccacccca	ctcttaatca	gtgggtggaag	aacggctctca	gaactgtttg	120
tttcaattgg	ccatttaagt	ttagtagtaa	aagactgggt	aatgataaca	atgcatcgta	180
aaaccttcag	aaggaaagga	gaatgttttg	nggaccactt	tggttttctt	ttttgcgtgt	240
ggcagtttta	agttattagt	ttttaaatac	agtacttttt	aatggaaaca	acttgaccaa	300
aaatttgta	cagaattttg	agaccatta	aaaaagttaa	atgagataaa	aaaaaaaaan	360
cntg						364

<210> 752

<211> 498

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature
 <222> (1)...(498)
 <223> n = A,T,C or G

<400> 752
 ctggattatg ggttggnatt ggtcatatgt tagactccat acaggcatag ctatgatgca 60
 gtgaatccct tagaagttac aattctcaaa ttacatactt cctcagatgt aacattagaa 120
 ctcaatattt ctaacaataa cataccagaa aaggctggac tggcactcat ctgctgacta 180
 acttgtagcc tcagtaatat gacatacttg cctttaacaa attatctcaa attaactaac 240
 agaccttcag aaaatggaga ttctttttga tggggacata atcaaattta agtctgagaa 300
 atatgcttaa cagttggaac tcaaattaaa tgtactgatt ttaaagttaa gacattaaca 360
 agtgatanat tagcctcaaa aaaagacaat ttggnaaggn ttaggtcttt taatttggtg 420
 cttgntcaca acttgactgg tgcttctttc cttgctgctt cacatcaagc atggggccaa 480
 ttctattttt agtaaatg 498

<210> 753
 <211> 467
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(467)
 <223> n = A,T,C or G

<400> 753
 nacaacctta gccanaacca tttacccaaa taaagggata ggcgatagaa attgaaacct 60
 ggcgcaatag atatagnacc gcaagggaaa gatgaaaaat tataaccaag cataatatag 120
 caaggactaa cccctatacc ttctgcataa tgaattaact agaaataact ttgcaaggag 180
 agccaaagct aagacccccg aaaccagacg agctatctaa gaacagctaa aagagcacac 240
 ccgtctatgt agcaaaaatag tgggaagatt tataggtaga ggcgacaaac ctaccgagcc 300
 tggtgatagc tggntgncca agatagaatc ttagntcaac tttaaatttg cccacagAAC 360
 cctctaaatc cccttgtaaa tttactggtt agtccaaaga ggaacagctc ttggacacna 420
 ggaaaaaacc ttgcagagag agtaaaaaat ttaacaccca tagtagg 467

<210> 754
 <211> 196
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(196)
 <223> n = A,T,C or G

<400> 754
 gtcagtgtta agtgttntaa tctgacgcag gcttatgcgg aggagaatgt tttcatgtta 60
 cttatactaa cattagtctt tctatagggg gatagattgg tccaattggg tgtgaggagt 120
 tcagttatat gtttgggatt ttttaggcag tgggtgttga gcttgaacgc tttcttaatt 180
 ggtggctgct tttagg 196

<210> 755
 <211> 381
 <212> DNA
 <213> Homo sapien

243

<400> 755

ctggaaagga	ttctgtacat	ataagacatc	aaatattgag	ggatactgga	actttttaa	60
taatgggcaa	agaaagtcaa	caaaggaagt	tcatatgaaa	tcaaactagt	aatatgatta	120
caaaaaaaaa	gtttaaaatt	tttcttggcc	ccagtcttat	catttctgag	ccaaatacaa	180
ttctatcgaa	atcacctgaa	actgaaatca	ccattctagg	ctggttttcc	cataaagatg	240
gactgctcca	aaaagaggaa	tcaagaaaga	atttggctca	cagtgaatta	ttcactttgt	300
cttagttaac	taaaaataaa	atctgactgt	taactacaga	aatcatttca	aattctgtgg	360
tgataataaa	gtaatgaccg	c				381

<210> 756

<211> 341

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(341)

<223> n = A,T,C or G

<400> 756

ggntataaac	ctattattta	ttgcagaact	aataaaaaat	ccaaagcctt	gtatttgtac	60
atctttatta	tctctaaagc	actttcctca	acctaatttc	agtttttaca	attggtactc	120
aagaaaatag	agacagaaat	catttgattt	tgcccagaaa	ccatctgctt	atatttataa	180
ggccacctaa	tttgaaatca	catatagacc	aggcgcggtg	gctcacgcct	gtaattccaa	240
cactttggaa	ggccaaggca	ggtggatcac	aaggtcaaga	gattgagacc	atcttggcca	300
acatggcgaa	accccgctct	tacccaaaaat	acaaaaatca	g		341

<210> 757

<211> 479

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(479)

<223> n = A,T,C or G

<400> 757

cgcnttactg	tacatattgc	tagcagggag	acaactggaa	atactaaaca	aatactggaa	60
ttcacattac	agacagacga	aaccaacatg	gatgccacac	ataacttcct	ttgtagtttc	120
acagagagcc	tatttgtggt	tgctcaggtg	gggtcataca	ttgcttgag	aaatggcctg	180
atcatagctc	tatgaaacaa	tgaattcgga	atgaaatctt	accatgacac	ctctctgtag	240
gaaagaaatg	ttgcttcacg	tgtgctaagt	tgagataata	atatttcaca	tatttatata	300
cagagaatca	ctctcaaatt	taacccaaga	taagcaatag	gatttggggg	tgacttgtnc	360
acattttctaa	caacactttt	cttttttcta	gaggtcactc	tcaaactg	atatatcact	420
atagnttgag	ngtagggatt	caagtaatca	aaggttgta	ttgcaaaaga	gccaggcag	479

<210> 758

<211> 267

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(267)

<223> n = A,T,C or G

<400> 758

ccatgnctag	gtttatagat	agttgggtgg	gttgggtgtaa	atgagtgagg	caggagtcgg	60
aggaggttag	ttgtggcaat	aaaaatgatt	aaggatacta	gtataagaga	tcagggttcgt	120
ccttttagtgt	tgtgtatggc	tatcatttgt	tttgagggtta	gtttgactag	tcattgttgg	180
gtggttaatta	gtcggttgtt	gatgagatat	ttggagggtgg	ggatcaatag	agggggaaat	240
agaatgatca	gtactgcggc	gggtagg				267

<210> 759

<211> 449

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(449)

<223> n = A,T,C or G

<400> 759

cgagggtcttg	aaatcagcaa	cacacttaca	aatgagaaaa	tgaaaataga	agagtatata	60
aagaaagggg	aagaggatta	tgaagagagt	catcagagag	ctgtggctgc	agaggatatcc	120
gtacttgaaa	actggaagga	gagtgaagtg	tataagctac	agatcatgga	gtcacaagca	180
gaagcctttc	tgaagaagct	ggggctgatt	agccgtgatc	ctgcagcata	tcccgcacatg	240
gagtctgata	tacgttcacg	ggaattgttt	ctttctaata	ttacaaaaga	aattgagaaa	300
gcaaagtctc	agtttgaaga	acaaatttaag	gcaattaaaa	atgggtcccg	gctcagtgaa	360
ctttctaaag	ngcagatttc	tgagctttca	tttcctgcct	gtaacacggt	tcatcccgag	420
ttactccctg	agtcttcagg	ccacgatgg				449

<210> 760

<211> 414

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(414)

<223> n = A,T,C or G

<400> 760

ccatnaactg	gaagcagctc	actaaacaaa	cagnngcata	cccatagaac	tgcatacttc	60
tcagcagtat	gaaagaatga	gctacttata	taagcatcat	tgataaacct	caaaaaaaaa	120
atgccacatg	aagaanccca	agggggagaa	acataaaaaac	tttatatgnc	agncatataa	180
aattctagaa	aatgcaaact	aatccatcnt	aaaggaaagt	aaatcancag	ttgtctggag	240
gaccanagag	agcaggagga	gagagattnt	taanggggtt	aaagtaaatt	ngggagtgcc	300
cttccatttt	taaatnctat	gaaaatgaaa	gtaaaggccc	ntgcatgttg	taaactaata	360
gtaacaaaca	gattgggttg	gagtgggggtg	ttgtctgggg	acatcattac	aaan	414

<210> 761

<211> 428

<212> DNA

<213> Homo sapien

<400> 761

245

gagcctcact	aaaataacag	atcttcagtat	agccaagttc	atcagaaaga	ctcaaattgga	60
atgattttaca	agatagaaca	cttttaaacca	ggtcagtcct	atctttttgt	agctgaaggc	120
tatcagtcac	aacacaattt	cgcgtacacc	tctgctcatt	atggaattac	acttaaaacg	180
aatctcaaga	gggtgaccat	tggtgtttca	gataccatcc	ctaaggagag	tggttaacag	240
gaagattgcc	agtgttactg	atggaaagaa	gtgtttgttt	gttttttttc	ttgtcaaaga	300
cttacaccat	agtttttaaat	taaactgtca	ggcattttct	cagacagggt	ttccttttca	360
atgcagtaat	gaagaactaa	gataaaaatc	atgacttttg	actgccactc	aacattatta	420
catgcacc						428

<210> 762

<211> 574

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(574)

<223> n = A,T,C or G

<400> 762

caggctctgaa	ctgataagta	ttaagagacg	tttggttgcta	gttaagngtt	ccagttgaga	60
gttcgaagtg	aaaacctggg	ctctttacca	gtgttgagtg	agaagattta	ttctcttttc	120
ctctgaattt	accacatgta	acatcacaga	gacatgtaga	gttccttttag	gattttgcgat	180
ttgaaccagn	ccagtctgat	tttcaggtga	attctgtgaa	gagcttgatg	ggggaagtct	240
gaagacagaa	ggaattaggg	aaaagggtga	tacttacaga	gtaaaggaaa	taaatgaaaa	300
gataatggta	tttttggtag	ccacagggaa	atagcaggag	gggactggag	atcacacaca	360
cgcacacgca	cacacacaaa	cacacacaca	cgctaaaact	caaaactaaa	acctcccaaa	420
ggagctgctt	tgttttgcaga	cttcaattng	aagtagatac	taagggcaag	aatagaccag	480
ttaaaattca	cctgaaaatc	tcttcccann	cttcaaatgt	gctaaaatat	cactgtcagc	540
ttagcatctc	tncatgtatg	tatatataga	tgta			574

<210> 763

<211> 465

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(465)

<223> n = A,T,C or G

<400> 763

cctactatgg	gtgttaaaat	tttttactct	ctctacaagg	ntttttccta	gtgtccaaag	60
agctgttcct	ctttggacta	acagttaaat	ttacaagggg	atcttagagg	ttctgnnggc	120
aaattttaaag	ttgaactaag	attctatctt	ggacaaccag	ctatcaccag	gctcggtagg	180
tttgctgcct	ctacctataa	atcttccac	tattttgcta	catagacggg	tgtgctcttt	240
tagctgttct	taggtagctc	gtctggtttc	gggggtctta	gctttggctc	tccttgcaaa	300
gttattttcta	gttaattcat	tatgcagaag	gtataggggt	tagtccttgc	tatattatgc	360
ttggatataa	tttttcatct	ttcccttgcg	gtactatata	tattgcgcca	ngtttcaatt	420
tctatgcgct	atactttatt	tgggtaaatg	gtttggctaa	ggttg		465

<210> 764

<211> 151

<212> DNA

<213> Homo sapien

246

<400> 764
 ctgtcaatta atgctagtcc tcaggattta aaaaataatc ttaactcaaa gtccaatgca 60
 aaaacattaa gttggtaatt actcttgatc ttgaattact tccgttacga aagtccttca 120
 cttttttcaa actaagctac tatatttaag g 151

<210> 765
 <211> 251
 <212> DNA
 <213> Homo sapien

<400> 765
 gaagagctta tcacctttca tgatcacgcc ctcatagtea ttttccttat ctgcttccta 60
 gtctgtatg cccttttccct aacactcaca acaaaactaa ctaatactaa catctcagac 120
 gctcaggaaa tagtaaccgt ctgaactatc ctgcccgcga tcatcctagt cctcatcgcc 180
 ctcccatccc tacgcacccct ttacataaca gacgaggtea acgatccctc ccttaccatc 240
 aaatcaattg g 251

<210> 766
 <211> 375
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(375)
 <223> n = A,T,C or G

<400> 766
 cgaggctctgn cctcctgggt cttcatccat tattaacaga agagcatact ggtttcggtc 60
 cataaaatct ttgggaaggg acaactgtaa aggaagtcca tagtcgtcaa tatgaaggat 120
 tttaatttct ggctttccta tcttcttctt caggatagct tccttcagca tagaattgtt 180
 ttccaatata aaatatattt ctgggttggt cgtactatgt aggctgacca ctgggaccct 240
 tggaccttca cagaataata agaaatgttg attcatggga ctaaaactgg catcaaaata 300
 tgtacattgt tctttcatga aattacatga aatgcattgg cgattcaata atccttcagt 360
 agaagcactg tacag 375

<210> 767
 <211> 485
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(485)
 <223> n = A,T,C or G

<400> 767
 cgaggctctga accctcgtgg agccattcat acaggctccct aattaaggaa caagtgatta 60
 tgctaccttn gcacgggttag ggtaccgcgg cccgttaaac atgtgtcact gggcaggcgg 120
 tgccctctaat actggtgatg ctagaggatga tgtttttggn aaacaggcgg ggtaagattt 180
 gccgagttcc ttttactttt tttaaccttt ctttatgagc atgcctgtgt tgggttgaca 240
 gtgagggtta taatgacttg ttggtgattg tagatattgg gctgttaatt gtcagttcag 300
 tgttttaatc tgacgcaggc ttatgcggag gagaatgtt tcatgttact tatactaaca 360
 ttagttcttc tatagggtga tagatnggtc caattgggtg tgaggagntc acttatatgt 420

247

ttgggatttt ttaggtaagn ggggtgtgag cttgaacgct ttcttaattg ggggctgctt 480
 ttang 485

<210> 768
 <211> 379
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(379)
 <223> n = A,T,C or G

<400> 768
 ctgatattct attaaagata caaagaggag ctggnaccat ttcttctgaa actattacaa 60
 acaactgaaa aggtggaatt tctccctaata tcatttttagg aggccagcat tatactgata 120
 ccaaaacctg gcagagggtac aataataaaa ggaaacttca agtcagtcac actgatgaac 180
 accaatgtga aaatcctcaa taaaataactg gcaaactgaa ttcagcagca catcaaaaag 240
 ctaatccacc acaatcaagt cagcttcac cctgcgatgc aagtctggtt caacatatgc 300
 aaatcaataa atacaattca tcagataaac agagctaaag acaaaattca catgattttc 360
 tcaatagatg cagaaaagg 379

<210> 769
 <211> 518
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(518)
 <223> n = A,T,C or G

<400> 769
 cgagggtccat atgatgatca gtctatatag ttttaaggcgc agatacacaa attttcaaaa 60
 atatgggtag aatatagtca atatgaatgg aatagacaat gctttgaaaa tcaactggagg 120
 gaggtctttat tgtttggtgaa aacatgttgt catcactttt tgctttaagc ccttggtggt 180
 gaaataactc aaaccattct tccttatgct gaagatcgag aaccccaagt atcacatcta 240
 ccatcccact catcaatgtg attggtcagt ctttgctgag gncctgcata gccagtttta 300
 aagttagagt tcttgcatat acatatgaaa aggcattgta cttgtgcttt caaagagctt 360
 tttgcttggt gtaaaaagaa aactcaaatt acagtgtgat gtggaatata atggtggtag 420
 tttcatcgag atgatgggaa agaattgata agataaagcn gaaagatgag cagaattttc 480
 agattgggtn tggaaagagc acttaagaaa gaggggtg 518

<210> 770
 <211> 378
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(378)
 <223> n = A,T,C or G

<400> 770
 tatgggtcct gagtgtggaa tataagataa caagacaatt cccttgcttt caagggaaat 60

248

```

cacactttat aaaactttga attcttgaaa tgggtttcag aggttccaag gtcaaattca 120
agaataagag ttaagaagaa aaagactatg agaaaggaag tgntgacccc atttgcattt 180
aatggcagg aatagtctca atctactcat tggggaaaaa tgtatgttgc atatttttga 240
gatattgcaa cttgctctct ctctttgcca ccccaccctt tgnatgctc tgtttttggg 300
ctgaattggc aagaaaaatg gctggagggc tggaagaagn tggacccttc ttccttcttc 360
cttcttcttc ctttctcc 378

```

<210> 771

<211> 207

<212> DNA

<213> Homo sapien

<400> 771

```

cataaatatt atactagcat ttaccatctc acttctagga atactagtat atcgctcaca 60
cctcatatcc tccctactat gcctagaagg aataatacta tcaactgttca ttatagctac 120
tctcataacc ctcaacaccc actccctctt agccaatatt gtgcctattg ccatactagt 180
ctttgccgcc tgcgaagcag cggtagg 207

```

<210> 772

<211> 384

<212> DNA

<213> Homo sapien

<220>

<221> misc_feature

<222> (1)...(384)

<223> n = A,T,C or G

<400> 772

```

cctactatgg gtgttaaatt ttttactctc tctacaaggt tttttcctag tgtccaaaga 60
gctgttcctc tttggactaa cagttaaatt tacaagggga ttttagagggt tctgngggca 120
aatttaaagt tgaactaaga ttctatcttg gacaaccagc tatcaccagg ctcggtagggt 180
ttgtgcctc tacctataaa tcttcccaact attttgctac atagacgggt gtgctctttt 240
agctgttctt aggtagctcg tctggtttcg ggggtcttag ctttggtctt ccttgcaaag 300
ttatttctag ttaattcatt atgcagaagg tataggggtt agtccttgct atattatgct 360
tggttataat ttttcatctt tccc 384

```

<210> 773

<211> 182

<212> DNA

<213> Homo sapien

<400> 773

```

cccttttctt aacactcaca acaaaactaa ctaatactaa catctcagac gctcagggaa 60
atagaaaccg tctgaactat cctgcccgcc atcatcctag tcctcatcgc cctcccattc 120
ctacgcattc tttacataac agacgaggtc aacgatccct cccttaccat caaatcaatt 180
gg 182

```

<210> 774

<211> 191

<212> DNA

<213> Homo sapien

<400> 774

```

ccatggctag gtttatagat agttgggtgg ttgggtgtaa atgagtgagg caggagtccg 60

```



```

aggagggttag ttgtggcaat aaaaatgatt aaggatacta gtataagaga tcagggttcgt      120
ccttttagtgt tgtgtatggc tatcatttgt tttgaggtta gtttgattag tcattgttgg      180
gtggtaatta g                                     191

```

```

<210> 775
<211> 192
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(192)
<223> n = A,T,C or G

```

```

<400> 775
ccatggctaa gntatataga tagctgggtg gctggagtaa atgantgagg nacgagtcctg      60
angagggttag ttgaggcaat aaaaatgatn aaggatacta gtataagaga tcangttcgt      120
cctttacatg ttngttagtg ctatcatttg ttttgaggct agnttgatta gtcattgttg      180
ggtggtaatt aa                                     192

```

```

<210> 776
<211> 144
<212> DNA
<213> Homo sapien

```

```

<400> 776
ctgacccctt agaaccctgg ctctgccatt agctaggacc taagactctg cccacatttt      60
ggtctgttct ctcccattac acatagggtt gtctcagcat gcaagagttt ttcctttaaa      120
aaaaaaaaaa aaaaaaaaaa aaaa                                     144

```

```

<210> 777
<211> 483
<212> DNA
<213> Homo sapien

```

```

<220>
<221> misc_feature
<222> (1)...(483)
<223> n = A,T,C or G

```

```

<400> 777
cctactatgg gtgntaaatt ttttactctc tctacaaggt tttttcctag tgtccaaaga      60
gctgttcctc tttggactaa cagttaagtt tacaagggga ttttagagggt tctgtgggca      120
aatTTaaagt tgaactaaga ttctatcttg gacaaccagc tatcaccagg ctcggttaggt      180
ttgtcgcttc tacctataaa tcttcccact attttgctac atagacgggt gtgctctttt      240
agctgttctt aggtagctcg tctggtttct ggggtcttag ctttggctct ccttgcaaag      300
ttatttctag ttaattcatt atgcagaagg tataggggnt aagtccttgc tatattatgc      360
ttggatataa tttttcatct ttcccttgcg gtactatata tattgcgcca ggtttcaatt      420
tctgccgcct atactttatt tgggtaaatg gtttggtctaa ngttgctggt agaaggtgga      480
gtg                                     483

```

```

<210> 778
<211> 393
<212> DNA
<213> Homo sapien

```

250

<220>
 <221> misc_feature
 <222> (1)...(393)
 <223> n = A,T,C or G

<400> 778
 ctgcattttt attgcatct gcagatgaac tgggaaaatc tcattttaca acagaactga 60
 gacagacgac caccatattc actgaggtct aaatttgagc tttccactaa tgacattttg 120
 atttcccaac agagatactt ctggtcttac tgcacagtct ttttaagagaa atacttccat 180
 tatgccacat tgtccttgat ccgtaagtga tgtgttaagg tgcttcaaag gaactctgac 240
 ctctgaagta cttgagctac tttagtatgt ccagcctatt gctttttgtt ttagngngtc 300
 accataaata tcaggggcat aaaaggctat ctattcttaa ttcaaggata aaacagaaga 360
 agcttgtggn ataaaacaat agtcaagatc cag 393

<210> 779
 <211> 277
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(277)
 <223> n = A,T,C or G

<400> 779
 cctnttgatt tgatgggtaa ggggagggat cgttgacctc gtctgttatg taaaggatgc 60
 gtagggatgg gagggcgatg aggactagga tgatggcggg caggatagtt cagacggttt 120
 ctatttcctg agcgtctgag atgttagtat tagttagttt tgttgtgagt gttaggaaaa 180
 gggcatacag gactaggaag cagataagga aaatgactat gagggcgtga tcatgaaagg 240
 tgataagctc ttctatgata ggggaagtag cgtcttg 277

<210> 780
 <211> 328
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(328)
 <223> n = A,T,C or G

<400> 780
 catgntatgg ataaccatnt taactgtatt ttntgcancc cgtaccttct tgggaataca 60
 attgtctaac tttttatttt tggntggct gttgtggtgt gcaaaactcc gtacattgct 120
 attttgccac actgcaacac cttacagatg tggaagatgt gaaatttgtc atcaattatg 180
 actaccctaa ctctcagag gattatattc atcgaattgg aagaactgct cgcagtacca 240
 aaacaggcac agcatacact ttctttacac ctaataacat aaagcagggg agcgacctta 300
 tctctgtgct tcgggaagct aancaaac 328

<210> 781
 <211> 305
 <212> DNA
 <213> Homo sapien

251

<220>
 <221> misc_feature
 <222> (1)...(305)
 <223> n = A,T,C or G

<400> 781
 ctgttcagaa agctcattgg acctgggtttt gaaaataaaa caaagttaaa accctgggag 60
 gagttattgt gcagngtgga gtactcaggc tttcttataa agaaaaaaaa agttatctgg 120
 taccaaagtg tgcaacctac agaccctcag gtactgccct gtgacttctc tgtatgacat 180
 cacaaggctg ccaagtgcct gtttttctag aactaggagt tgggtgagggt tggctantgc 240
 tgaaaccatg cataggattg gtttactaaa ttaaaacctt attacgtacg tcctccaaaa 300
 gacag 305

<210> 782
 <211> 497
 <212> DNA
 <213> Homo sapien

<220>
 <221> misc_feature
 <222> (1)...(497)
 <223> n = A,T,C or G

<400> 782
 cgaggtggct ttaattgatg ttaatgcctt atgtcaaagt taaagttaga atttgctagg 60
 gctgggtagg ggagtgatat ttctaggact tagacattga aaactaattc agcctgtagt 120
 aacctgggatg gttttcaatg gcatgggttag tcaaattcat ggtttttaaac ttagaagcag 180
 ctttcggggg agaggggtagg ttggagcatt tattacatat ttactgttt aatgtcttaa 240
 ccgtgggcct tttaatttgt aaacactgaa atgattgttg ggctgtggaa aacatttacc 300
 tattttacctt ggaagtttta aaagacagtc cacttttttag catgtgtgtt gcgtccagcc 360
 tgtggtcgtc ttaactaata aatgngattt ttctctcaaa aaaaaaacct ccccgggcgg 420
 ccgctcaagg gcnattccn cacactggcg gccgttacta ggggatccga nctcgggtcca 480
 agcttggcgt aatcatg 497

<210> 783
 <211> 364
 <212> PRT
 <213> Homo sapien

<400> 783
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<210> 786

<211> 108

<212> PRT

<213> Homo sapiens

<400> 786

```

Arg Arg Ser Cys Glu Pro Ala Thr Arg Val Pro Glu Val Trp Ile Leu
      5              10              15
Ser Pro Leu Leu Arg His Gly Gly His Thr Gln Thr Gln Asn His Thr
      20              25              30
Ala Ser Pro Arg Ser Pro Val Met Glu Ser Pro Lys Lys Lys Asn Gln
      35              40              45
Gln Leu Lys Val Gly Ile Leu His Leu Gly Ser Arg Gln Lys Lys Ile
      50              55              60
Arg Ile Gln Leu Arg Ser Gln Val Leu Gly Arg Glu Met Arg Asp Met
      65              70              75              80
Glu Gly Asp Leu Gln Glu Leu His Gln Ser Asn Thr Gly Asp Lys Ser
      85              90              95
Gly Phe Gly Phe Arg Arg Gln Gly Glu Asp Asn Thr
      100              105

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<210> 787

<211> 152

<212> PRT

<213> Homo sapiens

<400> 787

257

Arg Pro Lys Glu Glu Val Pro Arg Ser Lys Ala Leu Glu Val Thr Lys
 5 10 15
 Leu Ala Ile Glu Ala Gly Phe Arg His Ile Asp Ser Ala His Leu Tyr
 20 25 30
 Asn Asn Glu Glu Gln Val Gly Leu Ala Ile Arg Ser Lys Ile Ala Asp
 35 40 45
 Gly Ser Val Lys Arg Glu Asp Ile Phe Tyr Thr Ser Lys Leu Trp Ser
 50 55 60
 Thr Phe His Arg Pro Glu Leu Val Arg Pro Ala Leu Glu Asn Ser Leu
 65 70 75 80
 Lys Lys Ala Gln Leu Asp Tyr Val Asp Leu Tyr Leu Ile His Ser Pro
 85 90 95
 Met Ser Leu Lys Pro Gly Glu Glu Leu Ser Pro Thr Asp Glu Asn Gly
 100 105 110
 Lys Val Ile Phe Asp Ile Val Asp Leu Cys Thr Thr Trp Glu Ala Met
 115 120 125
 Glu Lys Cys Lys Asp Ala Gly Leu Ala Lys Ser Ile Gly Val Ser Asn
 130 135 140
 Phe Asn Pro Gln Ala Ala Gly Asp
 145 150

<210> 788

<211> 1633

<212> DNA

<213> Homo sapiens

<400> 788

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 ctcccaaaaag gccaccgtct ggattcttcc tgttctgttc agaattccgc cccaagatca 420
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 agtatgagaa ggatgttgct gactataagt cgaaaggaaa gtttgatggt gcaaagggtc 600
 ctgctaaagt tgcccggaaa aaggtggaag aggaagatga agaacaggag gaggaagaag 660
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 ccctataaat gtcg 1633

258

<210> 789
 <211> 200
 <212> PRT
 <213> Homo sapien

<400> 789
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 1 5 10 15
 Ala Phe Phe Val Gln Thr Cys Arg Glu Glu His Lys Lys Lys Asn Pro
 20 25 30
 Glu Val Pro Val Asn Phe Ala Glu Phe Ser Lys Lys Cys Ser Glu Arg
 35 40 45
 Trp Lys Thr Met Ser Gly Lys Glu Lys Ser Lys Phe Asp Glu Met Ala
 50 55 60
 Lys Ala Asp Lys Val Arg Tyr Asp Arg Glu Met Lys Asp Tyr Gly Pro
 65 70 75 80
 Ala Lys Gly Gly Lys Lys Lys Lys Asp Pro Asn Ala Pro Lys Arg Pro
 85 90 95
 Pro Ser Gly Phe Phe Leu Phe Cys Ser Glu Phe Arg Pro Lys Ile Lys
 100 105 110
 Ser Thr Asn Pro Gly Ile Ser Ile Gly Asp Val Ala Lys Lys Leu Gly
 115 120 125
 Glu Met Trp Asn Asn Leu Asn Asp Ser Glu Lys Gln Pro Tyr Ile Thr
 130 135 140
 Lys Ala Ala Lys Leu Lys Glu Lys Tyr Glu Lys Asp Val Ala Asp Tyr
 145 150 155 160
 Lys Ser Lys Gly Lys Phe Asp Gly Ala Lys Gly Pro Ala Lys Val Ala
 165 170 175
 Arg Lys Lys Val Glu Glu Glu Asp Glu Glu Glu Glu Glu Glu Glu
 180 185 190
 Glu Glu Glu Glu Glu Asp Glu
 195 200

<210> 790
 <211> 457
 <212> DNA
 <213> Homo sapiens

<400> 790
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 tcccaggagc ccagtaatgg agagcccaa aaagaagaac cagcagctga aagtcgggat 180
 cctacacctg ggcagcagac agaagaagat caggatacag ctgagatccc agtgcgcgac 240
 atggaagggtg atctgcaaga gctgcatcag tcaaacaccg gggataaatc tggatttggg 300
 ttccggcgtc aaggtgaaga taatacctaa agaggaacac tgtaaaatgc cagaagcagg 360
 tgaagagcaa ccacaagttt aaatgaagac aagctgaaac aacgcaagct ggttttatat 420
 tagatatttg acttaacta tctcaataaa gttttgc 457

<210> 791
 <211> 126
 <212> PRT
 <213> Homo sapiens

259

<400> 791

Ser Pro Val Leu Gly Thr Arg Arg Ser Cys Glu Pro Ala Thr Arg Val
 5 10 15

Pro Glu Val Trp Ile Leu Ser Pro Leu Leu Arg His Gly Gly His Thr
 20 25 30

Gln Thr Gln Asn His Thr Ala Ser Pro Arg Ser Pro Val Met Glu Ser
 35 40 45

Pro Lys Lys Lys Asn Gln Gln Leu Lys Val Gly Ile Leu His Leu Gly
 50 55 60

Ser Arg Gln Lys Lys Ile Arg Ile Gln Leu Arg Ser Gln Cys Ala Thr
 65 70 75 80

Trp Lys Val Ile Cys Lys Ser Cys Ile Ser Gln Thr Pro Gly Ile Asn
 85 90 95

Leu Asp Leu Gly Ser Gly Val Lys Val Lys Ile Ile Pro Lys Glu Glu
 100 105 110

His Cys Lys Met Pro Glu Ala Gly Glu Glu Gln Pro Gln Val
 115 120 125

<210> 792

<211> 461

<212> DNA

<213> Homo sapiens

<400> 792

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 gagagcccca aaaagaagaa ccagcagctg aaagtcggga tcttacacct gggcagcaga 180
 cagaagaaga tcaggatata gctgagatcc caggtgctgg gaagggaaat gcgcgacatg 240
 gaaggtgatc tgcaagagct gcatcagtca aacaccgggg ataatcttgg atttgggttc 300
 cggcgtcaag gtgaagataa tacctaaaga ggaacactgt aaaatgccag aagcaggtga 360
 agagcaacca caagtttaaa tgaagacaag ctgaaacaac gcaagctggt tttatattag 420
 atatttgact taaactatct caataaagtt ttgcagcttt c 461

<210> 793

<211> 108

<212> PRT

<213> Homo sapiens

<400> 793

Arg Arg Ser Cys Glu Pro Ala Thr Arg Val Pro Glu Val Trp Ile Leu
 5 10 15

Ser Pro Leu Leu Arg His Gly Gly His Thr Gln Thr Gln Asn His Thr
 20 25 30

Ala Ser Pro Arg Ser Pro Val Met Glu Ser Pro Lys Lys Lys Asn Gln

260

35	40	45
Gln Leu Lys Val Gly Ile Leu His Leu Gly Ser Arg Gln Lys Lys Ile		
50	55	60
Arg Ile Gln Leu Arg Ser Gln Val Leu Gly Arg Glu Met Arg Asp Met		
65	70	75 80
Glu Gly Asp Leu Gln Glu Leu His Gln Ser Asn Thr Gly Asp Lys Ser		
85	90	95
Gly Phe Gly Phe Arg Arg Gln Gly Glu Asp Asn Thr		
100	105	

<210> 794
 <211> 970
 <212> DNA
 <213> Homo sapiens

<400> 794
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 atgacctggg gttgtgtctg atcaccccaa cattcctggc tgcccaatgt ggggcaatga 180
 agacccagct gaaggaatgc tagagtgtgt gaaagtggag gacgcatcgt caaaggacac 240
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 gcaaatatca cagtgttaga tgaactttct gggtgacacc tgacaggaag agcctctgta 420
 ttggaccacc atgtttgtgc tcaactgtgt gtaacaaacc aacacaccaa aatagcggga 480
 gttgccactg acaaagagtt gaatgatcaa atgacggcca aaggaggagg ttccgagaag 540
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 cagtgtgaag agagaagaca tattctacac ttcaaagctt tgggtccactt ttcacgacc 720
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 tgaaaatgga aaagtaatat ttgacatagt ggatctctgt accacctggg aggccatgga 900
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 agctggagat 970

<210> 795
 <211> 152
 <212> PRT
 <213> Homo sapiens

<400> 795
 Arg Pro Lys Glu Glu Val Pro Arg Ser Lys Ala Leu Glu Val Thr Lys
 5 10 15
 Leu Ala Ile Glu Ala Gly Phe Arg His Ile Asp Ser Ala His Leu Tyr
 20 25 30
 Asn Asn Glu Glu Gln Val Gly Leu Ala Ile Arg Ser Lys Ile Ala Asp
 35 40 45

261

Gly Ser Val Lys Arg Glu Asp Ile Phe Tyr Thr Ser Lys Leu Trp Ser
50 55 60

Thr Phe His Arg Pro Glu Leu Val Arg Pro Ala Leu Glu Asn Ser Leu
65 70 75 80

Lys Lys Ala Gln Leu Asp Tyr Val Asp Leu Tyr Leu Ile His Ser Pro
85 90 95

Met Ser Leu Lys Pro Gly Glu Glu Leu Ser Pro Thr Asp Glu Asn Gly
100 105 110

Lys Val Ile Phe Asp Ile Val Asp Leu Cys Thr Thr Trp Glu Ala Met
115 120 125

Glu Lys Cys Lys Asp Ala Gly Leu Ala Lys Ser Ile Gly Val Ser Asn
130 135 140

Phe Asn Pro Gln Ala Ala Gly Asp
145 150

<210> 796

<211> 2435

<212> DNA

<213> Homo sapiens

<400> 796

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262

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aagggatgag aaacagacta catgtcttga tgaggggaac cacaaagagc ttgtggccat 1680
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```

<210> 797

<211> 120

<212> PRT

<213> Homo sapiens

<400> 797

```

Thr Thr Arg Pro Arg Thr Arg Gly Gln Arg Glu Ser Trp Arg His Leu
          5                      10                      15

```

```

Ala Ser Gly Ala Gly Val Gly Leu Gly Thr Ala Gly Ser Arg Pro Asp
          20                      25                      30

```

```

Arg Gly Gly Val Gly Gly Glu Thr Arg Ala Ala Leu Ala Arg Ala Pro
          35                      40                      45

```

```

Pro Pro Gly Arg Ala Glu Trp Tyr Gly Pro Ala Gly Val Lys Ala Gly
          50                      55                      60

```

```

Gly Arg Arg Arg Val Pro Arg Arg Arg Arg Arg Trp Gly Cys Val Gln
          65                      70                      75                      80

```

```

Glu Glu Arg Trp Ala Gly Pro Ala Arg Val Gly Gly Arg Pro Arg Gly
          85                      90                      95

```

```

Pro Gly Arg Ala Ala Ala Arg Arg Ala Ala Ala Ser Thr Arg Ala Ala
          100                     105                     110

```

```

Ser Pro Arg Cys Thr Thr Cys Arg
          115                     120

```

<210> 798

<211> 164

<212> PRT

<213> Homo sapiens

<400> 798

```

Pro Arg Val Arg Gly Arg Val Gly Ser Ala Ser His Gly Gly Thr Trp

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263

	5	10	15
Arg Ala Glu Pro Glu Ser Gly Trp Gly Pro Arg Gly Arg Gly Arg Thr	20	25	30
Ala Ala Gly Ser Gly Glu Lys Arg Ala Leu Pro Trp His Gly Pro Pro	35	40	45
Pro Pro Ala Ala Arg Asn Gly Met Ala Arg Pro Glu Leu Arg Pro Gly	50	55	60
Gly Gly Gly Glu Ser Arg Gly Gly Gly Asp Asp Gly Ala Ala Cys Arg	65	70	75
Arg Asn Ala Gly Gln Gly Arg Arg Gly Ser Gly Gly Ala Arg Gly Ala	85	90	95
Arg Ala Glu Arg Arg Arg Ala Gly Arg Gln His Pro Leu Gly Pro His	100	105	110
Arg Arg Gly Ala Gln Arg Ala Ala Glu Arg Ala His Pro Ala Ala Ala	115	120	125
Val Arg Val Gly Pro Arg Gln Gly Ala Glu Pro Arg Gly His Asp Pro	130	135	140
Gly Gly Pro Arg Gln Arg Ala Pro His Arg Cys Pro Leu Asp Gln Arg	145	150	155
			160
Gly Pro Gly Arg			

<210> 799

<211> 60

<212> PRT

<213> Homo sapiens

<400> 799

His Ala Ser Ala Asp Ala Trp Ala Ala Arg Val Met Ala Ala Pro Gly	5	10	15
---	---	----	----

Glu Arg Ser Arg Ser Arg Ala Gly Asp Arg Gly Val Glu Ala Gly Pro	20	25	30
---	----	----	----

Arg Arg Gly Arg Gly Arg Asn Ala Arg Cys Pro Gly Thr Gly Pro Pro	35	40	45
---	----	----	----

Pro Arg Pro Arg Gly Met Val Trp Pro Gly Arg Ser	50	55	60
---	----	----	----

<210> 800

<211> 2477

<212> DNA

<213> Homo sapien

<400> 800

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<210> 801

<211> 1619

<212> DNA

<213> Homo sapien

<400> 801

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<210> 802

<211> 3115

<212> DNA

<213> Homo sapien

<400> 802

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<210> 803

<211> 1238

<212> DNA

<213> Homo sapien

<400> 803

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<210> 804

<211> 4637

<212> DNA

<213> Homo sapiens

<400> 804

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210> 805

<211> 394

<212> PRT

<213> Homo sapiens

<400> 805

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Ser His Gly Thr Leu Gly Leu Pro Ser Gly Gly Lys Cys Leu Leu Leu
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Asp Cys Arg Pro Phe Leu Ala His Ser Ala Gly Tyr Ile Leu Gly Ser
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Val Ser Leu Glu Gln Ile Leu Pro Ala Glu Glu Glu Val Arg Ala Arg

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269

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Glu	Pro	Leu	Asp	Leu	Asp	Cys	Ser	Ser	Cys	Gly	Thr	Pro	Leu	His	Asp				
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270

His Ser Pro Ile Thr Thr Ser Pro Ser Cys
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<210> 806

<211> 302

<212> PRT

<213> Homo sapiens

<400> 806

Val Arg Ala Arg Leu Arg Ser Gly Leu Tyr Ser Ala Val Ile Val Tyr
5 10 15

Asp Glu Arg Ser Pro Arg Ala Glu Ser Leu Arg Glu Asp Ser Thr Val
20 25 30

Ser Leu Val Val Gln Ala Leu Arg Arg Asn Ala Glu Arg Thr Asp Ile
35 40 45

Cys Leu Leu Lys Gly Gly Tyr Glu Arg Phe Ser Ser Glu Tyr Pro Glu
50 55 60

Phe Cys Ser Lys Thr Lys Ala Leu Ala Ala Ile Pro Pro Pro Val Pro
65 70 75 80

Pro Ser Ala Thr Glu Pro Leu Asp Leu Gly Cys Ser Ser Cys Gly Thr
85 90 95

Pro Leu His Asp Gln Gly Gly Pro Val Glu Ile Leu Pro Phe Leu Tyr
100 105 110

Leu Gly Ser Ala Tyr His Ala Ala Arg Arg Asp Met Leu Asp Ala Leu
115 120 125

Gly Ile Thr Ala Leu Leu Asn Val Ser Ser Asp Cys Pro Asn His Phe
130 135 140

Glu Gly His Tyr Gln Tyr Lys Cys Ile Pro Val Glu Asp Asn His Lys
145 150 155 160

Ala Asp Ile Ser Ser Trp Phe Met Glu Ala Ile Glu Tyr Ile Asp Ala
165 170 175

Val Lys Asp Cys Arg Gly Arg Val Leu Val His Cys Gln Ala Gly Ile
180 185 190

Ser Arg Ser Ala Thr Ile Cys Leu Ala Tyr Leu Met Met Lys Lys Arg
195 200 205

Val Arg Leu Glu Glu Ala Phe Glu Phe Val Lys Gln Arg Arg Ser Ile
210 215 220

Ile Ser Pro Asn Phe Ser Phe Met Gly Gln Leu Leu Gln Phe Glu Ser
225 230 235 240

271

Gln Val Leu Ala Thr Ser Cys Ala Ala Glu Ala Ala Ser Pro Ser Gly
 245 250 255

Pro Leu Arg Glu Arg Gly Lys Thr Pro Ala Thr Pro Thr Ser Gln Phe
 260 265 270

Val Phe Ser Phe Pro Val Ser Val Gly Val His Ser Ala Pro Ser Ser
 275 280 285

Leu Pro Tyr Leu His Ser Pro Ile Thr Thr Ser Pro Ser Cys
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<210> 807

<211> 3829

<212> DNA

<213> Homo sapiens

<400> 807

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```

<210> 808

<211> 781

<212> DNA

<213> Homo sapiens

<400> 808

```

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gaagaggaac cagcaggctt ccggagggtt gtgtggtcag tgactcagag tgagaaggcc 180
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tgttgggggt atccgagtc cagaagcacc tggaaacccc acagaagatt ctggactccc 360
cagacgggac caggagaggg acggcatgag cgacacacac aaacacagaa ccacacagcc 420
agtcccagga gccagtaat ggagagcccc aaaaagaaga accagcagct gaaagtctgg 480
atcctacacc tgggcagcag acagaagaag atcaggatac agctgagatc ccagtgcgcg 540
acatggaagg tgatctgcaa gagctgcatc agtcaaacac cggggataaa tctggatttg 600
ggttccggcg tcaagtgtaa gataatacct aaagaggaa actgtaaaat gccagaagca 660
ggtgaagagc aaccacaagt ttaaatgaag acaagctgaa acaacgcaag ctggttttat 720
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a 781

```

<210> 809

<211> 160

273

<212> PRT

<213> Homo sapi ns

<400> 809

Met Arg Cys His Ala His Gly Pro Ser Cys Leu Val Thr Ala Ile Thr
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Arg Glu Glu Gly Gly Pro Arg Ser Gly Gly Ala Gln Ala Lys Leu Gly
 20 25 30

Cys Cys Trp Gly Tyr Pro Ser Pro Arg Ser Thr Trp Asn Pro Asp Arg
 35 40 45

Arg Phe Trp Thr Pro Gln Thr Gly Pro Gly Glu Gly Arg His Glu Arg
 50 55 60

His Thr Gln Thr Gln Asn His Thr Ala Ser Pro Arg Ser Pro Val Met
 65 70 75 80

Glu Ser Pro Lys Lys Lys Asn Gln Gln Leu Lys Val Gly Ile Leu His
 85 90 95

Leu Gly Ser Arg Gln Lys Lys Ile Arg Ile Gln Leu Arg Ser Gln Cys
 100 105 110

Ala Thr Trp Lys Val Ile Cys Lys Ser Cys Ile Ser Gln Thr Pro Gly
 115 120 125

Ile Asn Leu Asp Leu Gly Ser Gly Val Lys Val Lys Ile Ile Pro Lys
 130 135 140

Glu Glu His Cys Lys Met Pro Glu Ala Gly Glu Glu Gln Pro Gln Val
 145 150 155 160

<210> 810

<211> 624

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(624)

<223> n=A,T,C or G

<400> 810

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 agccctcat gatnggcacc gggacagtca cgaggaaggg ctccaccttc cggcccatgg 120
 acacggatgc cgaggaggca ggggtgagca ccgatgccgg cggccactat gactgcccgc 180
 agcgggcccgg ccgccacgag tacgcgctgc ccctggcgcc cccggagccc gagtacgcca 240
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 gcgtcccagg gcccagccc ggccacaaac actccctctc ctcgggcggc ttctcccccg 360
 tagcgggtgt gggcgcccag gacggagact atcaaaggcc acacagcgca cagcctgcgg 420
 acaggggcta cgaccggccc aaagctgtca gcgcctcgc caccgaaagc ggacaccctg 480

274

```

actctcagaa gcccccaacg catccccggga caagtgcag ctattctgcc cccagagact 540
gcctcacacc cctcaaccag acggccatga ctgccctttt gtgaacacaa tgtgaaagaa 600
gcctgctgtg gtactgagcg tcgg                                     624

```

<210> 811

<211> 572

<212> DNA

<213> Homo sapiens

<400> 811

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acggcctgga gcaggcgctg cggaggcgcg agagcgagca cgagaggag gtgcgcgctc 180
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cccgcgggga gcggagaagc cgtctggagc tggagctgca gatccgcgag caggacctgg 300
aacgcgcggg cctgcggcag cgggagttag agcagcagct gcacgcccag gctgaggagc 360
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agctggaggg ggcgcaggag cagatccgca ggctggagag cgaagcacga ggccgccagg 480
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<210> 812

<211> 594

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(594)

<223> n=A,T,C or G

<400> 812

```

cggaagttgg cgcagcgcgg ttgccaatgg tcgctccctg atttnatgcc gctcgtgggtg 60
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ggtttccggt acgagctcta ctgcctggca cgggcggcg gcaccccgt ctgcctgggtc 360
tactgcgtac ggcccggcg cccgatcgcg ggacctcagg tggcgggagc gaacgagaac 420
cctggccgga acgtcagtggt gagttggcgg ccacgcgctg aggaggacgg gagagcccag 480
gcggcgggca gcagcgctct cagggaactg catactgcgg actctgtagt aaatggaagt 540
gcccaggccg acgtacccaa ggaactggag cgagaagaat ccggggctgc ggag          594

```

<210> 813

<211> 561

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(561)

<223> n=A,T,C or G

<400> 813

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tagatgaagc caaacattgt tggaggtact gaaatcttag actccaccat gtgtccagga 120
nccattgac gtctctctct ctgaaaactc cgtgtggccc tcgctctgca ctgtcatgag 180
gcggtgatgg agctagatac ccaccacgga caatgatcat cagtttgggg ttctctgggt 240
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acgggatctc tcatccaggc gatacgtctg gtctgtggc atgtggctct cnacgaaaca 360
ccaggggancg attatgttgg ggacttcttg gggctctgct ggtctctgct ccagacacga 420
ttaatccgaa atgtgttaan tcgancacat ggggccacgt ccaggacagc tcccatcgaa 480
ctctcnaggc tctctanctc agggatgaag gaggtnaagt gatcgatnct cacaagcgan 540
agctctcgcn cnatatctgc g 561
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<210> 814

<211> 307

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(307)

<223> n=A,T,C or G

<400> 814

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ccnncgtgga aanggtctgg nncgcggcgg ntctngcaga agtatcccga tttttttttt 120
tttttttttt tttttggngg agggaaantt ncagacatag ctttattgct gactcctgcc 180
cccttcnag ccctagtcac aggcnnacagg gntgttttgt aanttaaant ttcnnggaaaa 240
tngngtntt tntgcatnca anagaagggn tgccaaangn ggggtattgc ttctgggtgg 300
nttacct 307
```

<210> 815

<211> 784

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(784)

<223> n=A,T,C or G

<400> 815

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gttggattaa gctgcttatg agctctttga cagtgttgat tttgatcagt ggtttaaaaa 180
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ttggaaacca tgttcacact actttttcag ttactgcagc aagttacaga atgtgacaca 480
aagatgcatg ttttgcatgt cttttcttgt gtgatcgaaa gagtcaacat gcagatacga 540
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caatatgttg agatgtgcta ttttgaccac acttattcat cttggtcagg gattangagc 660
agacagcaag acctgtccct ttcctgtccc agttattcac tgagtaccag atgtttcaca 720
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gccttcncat gtttattttt ctggaaaaat gggttaaaaat atnggtanga acctttggga 780
aaac 784

<210> 816
<211> 813
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(813)
<223> n=A,T,C or G

<400> 816
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agcagctgct gccagagccc tcttgtagct tctttatttt ctgtttcttt ccagctttcc 180
taccctccta tcccccttg tgtttgggcc acaattttga aataattttt attataggta 240
tgtgtgcca aagccagatt ttataaagg aaaataaatt aagaatttaa acagtaaaag 300
ccagtgtctc aaaatgtcag cattaataatg tgaaggggac agcagggtgt gaaccggaaa 360
cacacattgc caaacagttg ccaactgaac tgctgcttct catgggccgt tcttttcttt 420
gcccttaagg tcaatgccag tgtccagacg agcagtgtag aaaagctccc tgtgtgggtt 480
gtcgtgaggt ctgcttgat ctcttcactg gcgttagttt cattagctct ttattctcct 540
tacgttcgag tgaatctgcc aagaacactg gtggatagta ttatcctaac acttttggtt 600
tgggggaggg gagggggcag ggaatagtga gctggcttta ccaccttcag gatctcgaat 660
tgggcgcttg aacctaagaa agattgtgga cttatcaaaa gtcaccgctc agtgttcgct 720
aagcatgtat ttatgtgacn atcatactag ggaggggatg gttgggaatt cttccatgtg 780
caaattnngn cccgcaanaa gcaaaactgg ng 813

<210> 817
<211> 229
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(229)
<223> n=A,T,C or G

<400> 817
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acanacacat ttttttttcc aggtaaaagc tgtttttagt ttgtagtaca aatgtgactg 180
catccaatac tgacacattg ttcctttggc ccacagtccc antcaccac 229

<210> 818
<211> 781
<212> DNA
<213> Homo sapiens

<220>
<221> misc_feature
<222> (1)...(781)
<223> n=A,T,C or G

<400> 818

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cttggttagg gctccagggt ggcctctcag gcaggaacag gcttttttcc tcctgtcttt 120
tcctcacatc acgtcctgcc ccaggtcact gcataaataa gtgctttgga aagtattcat 180
ctagaaagta acataaatac tgtacataga aaagggttgc cgccccttag ccttcgcaact 240
gccccagaga gctctccaca tattgcacac ggcctcccca gccctgtggg gtccaggcct 300
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tggtggcctt ctaccangga tgctttcaca aggatgagac agaatcccaa tggtagtccc 480
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tggtttngnc tgtcatctcg gccacgggtc tcctnntgcg ccaccccccc ttnttgaatc 660
gnaantcctc aaanccctta ccaccacttg atgaccnanc atttttangg cctggcttga 720
aggngggggc cttnnggcccc ccnaaggggg aaatncccc ggngaatnc ccaangggga 780
a 781
```

<210> 819

<211> 199

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(199)

<223> n=A,T,C or G

<400> 819

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cnnngtggaa anggctgggn nngcggccgt tttcgnngta gtatcgcgnt tttttttttt 60
tttttgtggg aggttntgcn gtntttgntt gctctctcaa attccaggaa ttgacttatt 120
taattaatgc ctgcaacctg tgctagcaaa tatttgnaca aaacnanttg tgttggngat 180
gttcttttgg gtcgggcag 199
```

<210> 820

<211> 211

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(211)

<223> n=A,T,C or G

<400> 820

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agagagagag agagagagag agagagagag agagagagag agagagagag agagagagag 120
agacagtntc ntgtgtgtct ctctgtctcn aagtacncnc tgaggntatct gntntctgtn 180
tntngtaca cngtatctct cntgncata t 211
```

<210> 821

<211> 952

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)... (952)

<223> n=A,T,C or G

<400> 821

```
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ggcagcagag caccaaggaa acatccagac atgcgcggcc cggcccatcc gctcccggaa 120
cagcaccaag acgaaatggg aaactacatg tccccagggt cgaggctgca ggggcagact 180
ctggtgtgaa caggggggat gtgaccacct aaggaaaagg tcacacctgt cttggtatca 240
ggggctcaag agctctcaaa aatgtaaggg gccgacagtc ccctgcccca ggcctgatca 300
caactccagg gtcctgaggt cagagtaaag tgcagagggt tttaaacata accaaaattt 360
caggagaggg caattcttac ttgaaagagc aacaccctgg ggcgctgctt gccattactt 420
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cncccagggg accnaaaacc ccctacntg naataacnt tttttttttn aaccntttan 900
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<210> 822

<211> 587

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)... (587)

<223> n=A,T,C or G

<400> 822

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ccccangcgg ntgcatcttg cttcagactc atcaaactgc tgctgtccan ctncgncatg 420
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ttctgcttag cttctnccac tntgaaggnt gggctcttaa cttttggatt tttttttccn 540
ggcaggggga accatgaatg gggtacatac ccacncnggg ntttggc 587
```

<210> 823

<211> 264

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)... (264)

<223> n=A,T,C or G

<400> 823

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ntcnatncct actangncaa actgactccg ccctnagnca cctngtggtc canggctgcg 60
```

279

```

gagctgcgat acagccttcc gcgggtctgn tggaaaccccg acctntcntg gtgtntntcc 120
ntcccncc ccaacccgcc aagggcctgc ctttctnct gggcctttgc cagcgntngg 180
ccanaccggg gccaaaccgg nccccgggca cattttaacc nagggcncnc ttntagaana 240
aaaccccggn tgatgttata aagg                                     264

```

<210> 824

<211> 520

<212> DNA

<213> Homo sapiens

<220>

<221> misc_feature

<222> (1)...(520)

<223> n=A,T,C or G

<400> 824

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gcatgtctta ttatacaaca natccaactt ccctaagngg ntcacacatn ntaaggatt 120
gttaacaaaa taggaaantc tattngaact aacaatcatc tctttgaatc tgcntatccc 180
attaaaagca ttttctcaa tattcctcat atcggttatg gncaatggat acccatctga 240
gctggttgan ccctttaaat tnattatact taactttttg aaggctgta taccacagg 300
acaaacctaa ncaaccanca gatatacttg anggtntctc ctgtnatttc tcagattcca 360
atataccatt ttgccttnac acctacagcc cttaggggca tctctnttcc ncanaacaaa 420
ncattntcac taagacagnc tggggtnntn caccaatggc taccaaacct ctgnccgcna 480
cccaccgcnt aaanggcnga aattnccnan ccacacgggt 520

```

<210> 825

<211> 2064

<212> DNA

<213> Homo sapiens

<400> 825

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tcgtaaacac actctcctcc accggcgccct cccctccgc tctgcgcgcc gcccggtcg 180
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```

```

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<210> 826

<211> 2109

<212> DNA

<213> Homo sapiens

<400> 826

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2109

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281

<210> 827

<211> 394

<212> PRT

<213> Homo sapiens

<400> 827

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              20              25              30

Ser His Gly Thr Leu Gly Leu Pro Ser Gly Gly Lys Cys Leu Leu Leu
              35              40              45

Asp Cys Arg Pro Phe Leu Ala His Ser Ala Gly Tyr Ile Leu Gly Ser
              50              55              60

Val Asn Val Arg Cys Asn Thr Ile Val Arg Arg Arg Ala Lys Gly Ser
              65              70              75              80

Val Ser Leu Glu Gln Ile Leu Pro Ala Glu Glu Glu Val Arg Ala Arg
              85              90              95

Leu Arg Ser Gly Leu Tyr Ser Ala Val Ile Val Tyr Asp Glu Arg Ser
              100              105              110

Pro Arg Ala Glu Ser Leu Arg Glu Asp Ser Thr Val Ser Leu Val Val
              115              120              125

Gln Ala Leu Arg Arg Asn Ala Glu Arg Thr Asp Ile Cys Leu Leu Lys
              130              135              140

Gly Gly Tyr Glu Arg Phe Ser Ser Glu Tyr Pro Glu Phe Cys Ser Lys
              145              150              155              160

Thr Lys Ala Leu Ala Ala Ile Pro Pro Pro Val Pro Pro Ser Ala Thr
              165              170              175

Glu Pro Leu Asp Leu Gly Cys Ser Ser Cys Gly Thr Pro Leu His Asp
              180              185              190

Gln Gly Gly Pro Val Glu Ile Leu Pro Phe Leu Tyr Leu Gly Ser Ala
              195              200              205

Tyr His Ala Ala Arg Arg Asp Met Leu Asp Ala Leu Gly Ile Thr Ala
              210              215              220

Leu Leu Asn Val Ser Ser Asp Cys Pro Asn His Phe Glu Gly His Tyr
              225              230              235              240

Gln Tyr Lys Cys Ile Pro Val Glu Asp Asn His Lys Ala Asp Ile Ser
              245              250              255

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282

Ser Trp Phe Met Glu Ala Ile Glu Tyr Ile Asp Ala Val Lys Asp Cys
260 265 270

Arg Gly Arg Val Leu Val His Cys Gln Ala Gly Ile Ser Arg Ser Ala
275 280 285

Thr Ile Cys Leu Ala Tyr Leu Met Met Lys Lys Arg Val Arg Leu Glu
290 295 300

Glu Ala Phe Glu Phe Val Lys Gln Arg Arg Ser Ile Ile Ser Pro Asn
305 310 315 320

Phe Ser Phe Met Gly Gln Leu Leu Gln Phe Glu Ser Gln Val Leu Ala
325 330 335

Thr Ser Cys Ala Ala Glu Ala Ala Ser Pro Ser Gly Pro Leu Arg Glu
340 345 350

Arg Gly Lys Thr Pro Ala Thr Pro Thr Ser Gln Phe Val Phe Ser Phe
355 360 365

Pro Val Ser Val Gly Val His Ser Ala Pro Ser Ser Leu Pro Tyr Leu
370 375 380

His Ser Pro Ile Thr Thr Ser Pro Ser Cys
385 390